

Douglas L. Gin
University of Colorado Boulder

Curriculum Vitae

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Douglas L. Gin

Biographical Information

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Year and Place of Birth:

1966; British Columbia, Canada (U.S. Permanent Resident)

Educational Background

Ph.D. in Chemistry, California Institute of Technology Research Advisor: Robert H. Grubbs (Nobel Prize in Chemistry, 2005)	June 1993
B.Sc. (Honours) in Chemistry, University of British Columbia	May 1988

Academic Employment History

Professor Dept. of Chemistry, CU Boulder	2018–now
Professor Dept. of Chemical & Biological Engineering, and Dept. of Chemistry & Biochemistry, CU Boulder	2005–2018
Associate Professor Dept. of Chemical & Biological Engineering, and Dept. of Chemistry & Biochemistry, CU Boulder	2001–2005
Faculty scientist, Lawrence Berkeley National Laboratory	1994–2001
Assistant Professor of Chemistry, University of California, Berkeley, CA	1994–2001
Postdoctoral Fellow: University of Pennsylvania, Philadelphia, PA. Advisor: Alan G. MacDiarmid (Nobel Prize in Chemistry, 2000)	1992–1994
Visiting Scientist: IBM Almaden Research Center, San Jose, CA.	Oct. 1991

Visiting Scientist: ICI Chemicals and Polymers Ltd., Runcorn, UK. 1990, 1991

Awards and Honors

Ind. & Eng. Chem. (I&EC) Division Fellow (Am. Chem. Soc.)	2013
Polym. Mater. Sci. Eng. (PMSE) Division Fellow (Am. Chem. Soc.)	2011
CU Boulder College of Engineering Faculty Research Award	2008
University of Colorado at Boulder Inventor of the Year Award	2007
Boulder Faculty Assembly Excellence in Research, Scholarly, and Creative Work Award	2007
American Chemical Society Colorado Section Award	2006
CU Boulder Residence Life Academic Teaching Award	2002
Young Contributor to Polymer Materials Science Award American Chemical Society, Division of Polymeric Materials: Science and Engineering, and the Younger Chemists Committee	1999
Alfred P. Sloan Foundation Research Fellow	1999–2001
Carothers Polymer Lecturer, DuPont Central Research & Development	1999
Research Corporation Cottrell Teacher/Scholar Award	1997
National Science Foundation CAREER Award	1996–2001
3M Nontenured Faculty Awards (4 times)	1996–2000
Regents' Junior Faculty Fellow, UC Berkeley	1996
NSERC Canada Postdoctoral Fellowship	1992–1994
Finalist, Sherwin–Williams Graduate Student Award Competition, Division of Polymer Chemistry, American Chemical Society	1992
NSERC Canada 1967 Science and Engineering Graduate Scholarship	1988–1992

Publications

(a) Refereed Publications

Published:

1. Gin, D. L.; Conticello, V. P.; Grubbs, R. H.* "Transition-Metal-Catalyzed Polymerization of Heteroatom-Functionalized Cyclohexadienes: Stereoregular Precursors to Poly(*p*-phenylene)," *J. Am. Chem. Soc.* **1992**, *114* (8), 3167–3169.
 2. Conticello, V. P.; Gin, D. L.; Grubbs, R. H.* "Ring-Opening Metathesis Polymerization of Substituted Bicyclo[2.2.2]octadienes: A New Precursor Route to Poly(1,4-phenylenevinylene)," *J. Am. Chem. Soc.* **1992**, *114* (24), 9708–9710.
 - 3.‡ Gin, D. L.; Conticello, V. P.; Grubbs, R. H.* "Stereoregular Precursors to Poly(*p*-phenylene) via Transition-Metal-Catalyzed Polymerization. 1. Precursor Design and Synthesis," *J. Am. Chem. Soc.* **1994**, *116* (23), 10507–10519.
‡(Work highlighted in *Chemical & Engineering News* **1994**, *72* (51), 42, and *CHEMTECH* **1995**, 29).
 4. Gin, D. L.; Conticello, V. P.; Grubbs, R. H.* "Stereoregular Precursors to Poly(*p*-phenylene) via Transition-Metal-Catalyzed Polymerization. 2. The Effects of Polymer Stereochemistry and Acid Catalysts on Precursor Aromatization: A Characterization Study," *J. Am. Chem. Soc.* **1994**, *116* (24), 10934–10947.
 5. Gin, D. L.; Avlyanov, J. K.; MacDiarmid, A. G.* "Synthesis and Processing of Poly(*p*-phenylene) via the Phosphoric Acid-Catalyzed Pyrolysis of a Stereoregular Precursor Polymer: A Characterization Study," *Synth. Met.* **1994**, *66* (2), 169–175.
-
6. Gin, D. L.;* Conticello, V. P.* "Poly(*p*-phenylene): New Directions in Synthesis and Application," *Trends Polym. Sci.* **1996**, *4* (7), 217–223. (invited, peer-reviewed review article)
 - 7.‡ Smith, R. C.; Fischer, W. M.; Gin, D. L.* "Ordered Poly(*p*-phenylenevinylene) Matrix Nanocomposites via Lyotropic Liquid-Crystalline Monomers," *J. Am. Chem. Soc.* **1997**, *119* (17), 4092–4093.
‡(One-page highlights on this publication were reported in *Chemical & Engineering News* **1997**, *75* (20), 44; and *Inside R & D*, **1997**, *26* (24), 2.)
 8. Gray, D. H.; Hu, S.; Juang, E.; Gin, D. L.* "Highly Ordered Polymer–Inorganic Nanocomposites via Monomer Self-Assembly: In Situ Condensation Approach," *Adv. Mater.* **1997**, *9* (9) 731–736.
 9. Deng, H.; Gin, D. L.;* Smith, R. C. "Polymerizable Lyotropic Liquid Crystals Containing Transition-Metal and Lanthanide Ions: Architectural Control and Introduction of New Properties into Nanostructured Polymers," *J. Am. Chem. Soc.* **1998**, *120* (14), 3522–3523.

10. Gray, D. H.; Gin, D. L.* "Polymerizable Lyotropic Liquid Crystals Containing Transition-Metal Ions as Building Blocks for Nanostructured Polymers and Composites," *Chem. Mater.* **1998**, *10* (7), 1827–1832.
11. Baxter, B. C.; Gin, D. L.* "Synthesis and Polymerization of a Chiral Liquid Crystal Diacrylate Exhibiting Smectic A* and C* Phases," *Macromolecules* **1998**, *31* (14), 4419–4425.
12. Hoag, B. P.; Gin, D. L.* "Fluorescent Phasmodic Liquid Crystals," *Adv. Mater.* **1998**, *10* (18), 1546–1551.
13. Reppy, M. A.; Cooper, M. E.; Smithers, J. L.; Gin, D. L.* "A Novel Fluorescent Monomer for the Selective Detection of Phenols and Anilines," *J. Org. Chem.* **1999**, *64* (11), 4191–4195.
14. Gin, D. L.;; Deng, H.; Fischer, W. M.; Gray, D. H.; Juang, E.; Kim, E.; Smith, R. C. "Synthesis of Functional, Nanostructured Composites and Catalysts using Polymerizable Lyotropic Liquid Crystals," *Mol. Cryst. Liq. Cryst. Sci. Technol., Sect. A* **1999**, *332*, 2933–2939.
- 15.‡ Ellsworth, M. W.;; Gin, D. L.* "Recent Advances in the Design and Synthesis of Polymer–Inorganic Nanocomposites," *Polym. News* **1999**, *24* (10), 331–341.
‡(Coverpage article)
- 16.‡ Miller, S. A.; Kim, E.; Gray, D. H.; Gin, D. L.* "Heterogeneous Catalysis with Cross-linked Lyotropic Liquid Crystal Assemblies: Organic Analogues to Zeolites and Mesoporous Sieves," *Angew. Chem. Int. Ed.* **1999**, *38* (20), 3021–3026.
‡(Article highlighted in *Chemical & Engineering News* **1999**, *77* (42), 52.)
17. Gin, D. L.;; Gray, D. H.; Smith, R. C. "Polymerizable Liquid Crystals as Building Blocks for Functional, Nanostructured Materials," *Synlett* **1999**, *10*, 1509–1522. (invited, peer-reviewed review article)
18. Gin, D.;; Smith, R.; Deng, H.; Leising, G.* "Synthesis of PPV Nanocomposites using Lyotropic Liquid Crystal Monomers," *Synth. Met.* **1999**, *101*, 52–55.
19. Markart, P.; Zojer, E.; Tasch, S.; Smith, R.; Gin, D.;; Leising, G.* "Device Characteristics of Nanostructured Poly(*p*-phenylenevinylene)," *Synth. Met.* **1999**, *102*, 1155–1156.
20. Leising, G.;; Resel, R.; Markart, P.; Kreichbaum, M.; Laggner, P.; Smith, R.; Gin, D. "Structural Properties of Nanocomposite Materials Based on a Lyotropic Liquid Crystal," *Synth. Met.* **1999**, *102*, 1254–1255.
21. Zojer, E.; Markart, P.; List, E. J. W.; Graupner, W.; Smith, R.; Leising, G.;; Shinar, J.; Gin, D.* "Photophysical Properties of Nanostructured PPV-Composites," *Synth. Met.* **1999**, *102*, 1270–1271.
22. List, E. J. W.; Markart, P.; Graupner, W.; Leising, G.;; Partee, J.; Shinar, J.; Smith, R.; Gin, D. "Optically Detected Magnetic Resonance Studies of Nanostructured PPV-Composites," *Opt. Mater.* **1999**, *12*, 369–672.

23. Miller, S. A.; Ding, J. H.; Gin, D. L.* "Nanostructured Materials based on Polymerizable Amphiphiles," *Curr. Opin. Colloid Interface Sci.* **1999**, *4* (5), 338–347. (invited, peer-reviewed review article)
24. Ding, J. H.; Gin, D. L.* "Catalytic Pd Nanoparticles Synthesized using a Lyotropic Liquid Crystal Polymer Template," *Chem. Mater.* **2000**, *12* (1), 22–24.
25. Resel, R.; Thiesl, U.; Gadermaier, C.; Zojer, E.; Kriechbaum, M.; Amenitsch, H.; Gin, D.;* Smith, R.; Leising, G.* "The H₂-phase of the Lyotropic Liquid Crystal Sodium 3,4,5-Tris(□-acryloxyundecyloxy)benzoate," *Liq. Cryst.* **2000**, *27* (3), 407–411.
26. Gadermaier, C.; List, E. J. W.; Markart, P.; Graupner, W.; Partee, J.; Shinar, J.; Smith, R.; Gin, D.; Leising, G.* "Photophysical Studies on Nanostructured PPV-Systems," *Synth. Met.* **2000**, *111*, 523–526.
27. Pindzola, B. A.; Gin, D. L.* "Lyotropic Liquid-Crystalline Phase Behavior of Some Alkyltrimethylphosphonium Bromides," *Langmuir* **2000**, *16* (16), 6750–6753.
- 28.‡ Resel, R.; Leising, G.;* Markart, P.; Kriechbaum, M.; Smith, R.; Gin, D.* "Structural Properties of Polymerised Lyotropic Liquid Crystal Phases of 3,4,5-Tris(□-acryloxyalkoxy)benzoate Salts," *Macromol. Chem. Phys.* **2000**, *201* (11), 1128–1133.
‡(Coverpage article)
29. Baxter, B. C.; Gross, B. J.; Gin, D. L.;* Talroze, R. V.* "Correlation of Structure and Phase Behavior for a Series of Modular, Chiral Liquid Crystal Diacrylates based on Lactic Acid," *Liq. Cryst.* **2000**, *27* (10), 1317–1323.
30. Hoag, B. P.; Gin, D. L.* "Cross-linkable Liquid Crystal Monomers Containing 1,3-Diene Tail Systems," *Macromolecules* **2000**, *33* (23), 8549–8558.
31. Reppy, M. A.; Gray, D. H.; Pindzola, B. A.; Smithers, J. L.; Gin, D. L.* "A New Family of Polymerizable Lyotropic Liquid Crystals: Control of Feature Size in Cross-linked Inverted Hexagonal Assemblies via Monomer Structure," *J. Am. Chem. Soc.* **2001**, *123* (3), 363–371.
32. Yonezawa, K.; Gin, D.* "Probing Matrix Isolation Effects in Lyotropic Liquid Crystal Nanocomposites using Water-soluble PPV," *Synth. Met.* **2001**, *121*, 1291–1294.
33. Gadermaier, C.; Lanzani, G.; Cerullo, G.; Hoag, B.; Leising, G.;* De Silvestri, S.; Gin, D. "Stimulated Emission Dynamics in a Hexacatenar Liquid Crystal," *Synth. Met.* **2001**, *121*, 1323–1324.
34. Pindzola, B. A.; Hoag, B. P.; Gin, D. L.* "Polymerization of a Phosphonium Diene Amphiphile in the Regular Hexagonal Phase with Retention of Mesostructure," *J. Am. Chem. Soc.* **2001**, *123* (19), 4617–4618.
35. Gu, W.; Zhou, W.-J.; Gin, D. L.* "A Nanostructured, Scandium-Containing Polymer for Heterogeneous Lewis Acid Catalysis in Water," *Chem. Mater.* **2001**, *13* (6), 1949–1951.

36. Sentman, A. C.; Gin, D. L.* "Fluorescent Trimeric Liquid Crystals: Modular Design of Emissive Mesogens," *Adv. Mater.* **2001**, *13* (18), 1398–1401.
37. Gin, D. L.;;* Gu, W. "Nanoporous Catalytic Materials with Organic Frameworks," *Adv. Mater.* **2001**, *13* (18), 1407–1410.
38. Nguyen, S. T.; Gin, D. L.;;* Hupp, J. T.; Zhang, X. "Supramolecular Chemistry: Functional Structures on the Mesoscale," *Proc. Natl. Acad. Sci.* **2001**, *98* (21), 11849–11850.
39. Miller, S. A.; Gin, D. L.* "Organic Analogs to Zeolites and Mesoporous Sieves," In *Encyclopedia of Materials: Science and Technology*; Buschow, K. H. J.; Cahn, R. W.; Flemings, M. C.; Ilschner, B.; Kramer, E. J.; Mahajan, S.; Eds; Elsevier, 2001. (invited review article)
40. Gin, D. L.;;* Gu, W.; Pindzola, B. A.; Zhou, W.-J. "Polymerized Lyotropic Liquid Crystal Assemblies for Materials Applications," *Acc. Chem. Res.* **2001**, *34* (12), 973–980. (invited, peer-reviewed review article)
41. Hammond, S. R.; Zhou, W.-J.; Gin, D. L.;;* Avlyanov, J. K. "Synthesis and Lyotropic Liquid Crystalline Behavior of a Taper-Shaped, Phosphonic Acid Amphiphile," *Liq. Cryst.* **2002**, *29* (9), 1151–1159.
42. Gu, W.; Gin, D. L.* "Aromatic Sidechain-Functionalized Long Chain Acid Salts: Structural Factors Influencing Their Lyotropic Liquid-Crystalline Behavior," *Langmuir* **2002**, *18* (20), 7415–7427.
43. Pindzola, B. A.; Jin, J.; Gin, D. L.* "Cross-Linked Normal Hexagonal and Bicontinuous Cubic Assemblies via Polymerizable Gemini Amphiphiles," *J. Am. Chem. Soc.* **2003**, *125* (10), 2940–2949.
44. Sentman, A. C.; Gin, D. L.* "Polymerizable Bent-core Mesogens: Switchable Precursors to Ordered Polar Polymer Materials," *Angew. Chem. Int. Ed.* **2003**, *42* (16), 1815–1819.
45. Zhou, W.-J.; Gu, W.; Xu, Y.; Pecinovsky, C. S.; Gin, D. L.* "Assembly of Acidic Amphiphiles into Inverted Hexagonal Phases Using an L-Alanine-based Surfactant as a Structure-Directing Agent," *Langmuir* **2003**, *19* (16), 6346–6348.
- 46.‡ Xu, Y.; Gu, W.; Gin, D. L.* "Heterogeneous Catalysis Using a Nanostructured Solid Acid Resin Based on Lyotropic Liquid Crystals," *J. Am. Chem. Soc.* **2004**, *126* (6), 1616–1617.
‡(One-page highlight on this publication featured in *Chemical & Engineering News* **2004**, *82* (9), 36.)
47. Hoag, B. P.; Gin, D. L.* "Polymerizable Hexacatenar Mesogens Containing a Luminescent Oligo(*p*-phenylenevinylene) Core," *Liq. Cryst.* **2004**, *31* (2), 185–199.
48. Martin, A. G.; Harms, S.; Weigand, W.;;* Gin, D. L.* "Polymerizable Transition-metal-containing Liquid Crystals with Thermally Reactive 1,3-Diene Tails," *Adv. Mater.* **2005**, *17* (5), 602–606.

49. Jin, J.; Nguyen, V.; Gu, W., Lu, X.; Elliott, B. J.;* Gin, D. L.* "Cross-linked Lyotropic Liquid Crystal–Butyl Rubber Composites: Promising "Breathable" Barrier Materials for Chemical Protection Applications," *Chem. Mater.* **2005**, *17* (2), 224–226.
50. Zhou, M.; Kidd, T. J.; Noble, R. D.;;* Gin, D. L.* "Supported Lyotropic Liquid Crystal Polymer Membranes: Promising Materials for Molecular Size-selective Aqueous Nanofiltration," *Adv. Mater.* **2005**, *17* (15), 1850–1853.
51. Pecinovsky, C. S.; Nicodemus, G. D.; Gin, D. L.* "Nanostructured, Solid-state Organic, Chiral Diels–Alder Catalysts via Acid-induced Liquid Crystal Assembly," *Chem. Mater.* **2005**, *17* (20), 4889–4891.
52. Nelson, M.; Cain, N.; Taylor, C. E.; Ocko, B. M.; Gin, D. L.; Hammond, S. R.; Schwartz, D. K.* "Periodic Arrays of Interfacial Cylindrical Reverse Micelles," *Langmuir* **2005**, *21* (22), 9799–9802.
53. Xu, Y.; Gin, D. L.;;* Elliott, B. J.* "Catalyzed Dioctyl Phthalate Formation Using a Nanostructured Solid Acid Resin," *AIChE J.* **2006**, *52* (1), 418–421.
54. Gin, D. L.;;* Lu, X.; Nemade, P. R.; Pecinovsky, C. S.; Xu, Y.; Zhou, M. "Recent Advances in the Design of Polymerizable Lyotropic Liquid Crystal Assemblies for Heterogeneous Catalysis and Selective Separations," *Adv. Funct. Mater.* **2006**, *16* (7), 865–878. (invited review article)
55. Klinkel, K. L.; Kiemele, L. A.; Gin, D. L.; Hagadorn, J. R.* "Rapid Phosphorus Triester Hydrolysis Catalyzed by Bimetallic Tetrabenzimidazole Complexes," *Chem. Commun.* **2006**, (27), 2919–2921.
- 56.‡ Lu, X.; Nguyen, V.; Zhou, M.; Zeng, X.; Jin, J.; Elliott, B. J.;;* Gin, D. L.* "Cross-linked Bicontinuous Cubic Lyotropic Liquid Crystal–Butyl Rubber Composites: Highly Selective, Breathable Barrier Materials for Chemical Agent Protection," *Adv. Mater.* **2006**, *18* (24), 3294–3298.
‡(Article highlighted in the chemical industry trade magazines: *Chemical & Engineering News* **2006**, *84* (49), 63; and *Chemistry and Industry* **2006**, 24; and in the national science magazine: *Science News* **2007**, *171*, 13. Write-ups on this article were also carried internationally on-line by Reuters, United Press International, Scientific American, CNN, ABC News, Yahoo News, Science Daily, Medical News Today, Analytica World, Inside R & D, and Wired News)
57. Cain, N.; van Bogaert, J.; Gin, D. L.; Hammond, S. R.; Schwartz, D. K.* "Self-organization of a Wedge-shaped Surfactant in Monolayers and Multilayers," *Langmuir*, **2007**, *23* (2), 482–487.
58. Bara, J. E.; Kaminski, A. K.; Noble, R. D.;;* Gin, D. L.* "Influence of Nanostructure on Light Gas Separations in Cross-linked Lyotropic Liquid Crystal Membranes," *J. Membr. Sci.* **2007**, *288*, 13–19.
59. Klinkel, K. L.; Kiemele, L. A.; Gin, D. L.;;* Hagadorn, J. R.* "Effect of Ligand Modifications and Varying Metal-to-Ligand Ratio on the Catalyzed Hydrolysis of Phosphorus Triesters by Bimetallic Tetrabenzimidazole Complexes," *J. Mol. Catal. A:*

Chem. **2007**, *267*, 173–180.

60. Karp, E.; Pecinovsky, C. S.; McNevin, M. J.; Gin, D. L.; Schwartz, D. K.* “Langmuir Monolayers of a Photo-isomerizable Macrocyclic Surfactant,” *Langmuir* **2007**, *23* (15), 7923–7927.
61. Bara, J. E.; Gabriel, C. J.; Lessmann, S.; Carlisle, T. K.; Finotello, A.; Gin, D. L.;* Noble, R. D.* “Enhanced CO₂ Separation Selectivity in Oligo(ethylene glycol) Functionalized Room-Temperature Ionic Liquids,” *Ind. Eng. Chem. Res.* **2007**, *46* (16), 5380–5386.
62. Bara, J. E.; Lessmann, S.; Gabriel, C. J.; Hatakeyama, E. S.; Noble, R. D.;* Gin, D. L.* “Synthesis and Performance of Polymerizable Room Temperature Ionic Liquids as Gas Separation Membranes,” *Ind. Eng. Chem. Res.* **2007**, *46* (16), 5397–5404.
- 63.‡ Zhou, M.; Nemade, P. R.; Lu, X.; Zeng, X.; Hatakeyama, E. S.; Noble, R. D.;* Gin, D. L.* “New Type of Membrane Material for Water Desalination Based on a Cross-linked Bicontinuous Cubic Lyotropic Liquid Crystal Assembly,” *J. Am. Chem. Soc.* **2007**, *129* (31), 9574–9575.
‡(Article highlighted as a Research Highlight in *Nature* **2007**, *448* (7152), 391.)
64. Pecinovsky, C. S.; Hatakeyama, E. S.; Gin, D. L.* “Polymerizable Photochromic Macrocyclic Metallomesogens: Design of Supramolecular Polymers with Responsive Nanopores,” *Adv. Mater.* **2008**, *20* (1), 174–178.
- 65.‡ Gin, D. L.;* Bara, J. E.; Noble, R. D.; Elliott, B. J. “Polymerized Lyotropic Liquid Crystal Assemblies for Membrane Applications,” *Macromol. Rapid Commun.* **2008**, *29* (5), 367–389. (invited, peer-reviewed feature article)
‡(Article highlighted in *Mater. View* **2008**, *March*, A1–A8.)
66. Gin, D. L.;* Pecinovsky, C. S.; Bara, J. E.; Kerr, R. L. “Functional Lyotropic Liquid Crystal Materials,” in *Structure and Bonding*; Kato, T., Ed.; Vol. 128; Springer: Berlin, 2008, pp. 181–222. (invited, peer-reviewed review article)
67. Bara, J. E.; Hatakeyama, E. S.; Gabriel, C. J.; Lessmann, S.; Gin, D. L.;* Noble, R. D.* “Synthesis and Gas Separation Performance of Cross-linked Gemini Room Temperature Ionic Liquid Polymer Membranes,” *J. Membr. Sci.* **2008**, *316* (1–2), 186–191.
68. Lu, X.; Nguyen, V.; Zeng, X.; Elliott, B. J.;* Gin, D. L.* “Selective Rejection of a Water-soluble Nerve Agent Simulant Using a Nanoporous Lyotropic Liquid Crystal–Butyl Rubber Vapor Barrier Material: Evidence for a Molecular Size-Discrimination Mechanism,” *J. Membr. Sci.* **2008**, *318* (1–2), 397–404.
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Technol. **2008**, *19*, 1415–1420.

71. Smith, G. D.;* Borodin, O.; Li, L.; Kim, H.; Liu, Q; Bara, J. E.; Gin, D. L.; Noble, R. D. “A Comparison of Ether- and Alkyl-Derivatized Imidazolium-Based Room-Temperature Ionic Liquids: A Molecular Dynamics Simulation Study,” *Phys. Chem. Chem. Phys.* **2008**, *10* (41), 6301–6312.
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74. Bara, J. E.; Gin, D. L.; Noble, R. D.* “Effect of Anion on Gas Separation Performance of Polymer–Room-temperature Ion Liquid Composite Membranes,” *Ind. Eng. Chem. Res.* **2008**, *47* (24), 9919–9924.
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‡(Article highlighted by ScienceWatch.com as a hot new article based on number of citations in first year of publication. Highlight and commentary at <http://sciencewatch.com/dr/nhp/2010/10julnhp/10julnhpBaraET/>).
78. Bara, J. E.; Gin, D. L.; Noble, R. D.* “Effect of “Free” Cation Substituent on Gas Separation Performance of Polymer–Room-temperature Ionic Liquid Composite Membranes,” *Ind. Eng. Chem. Res.* **2009**, *48* (9), 4607–4610.
79. Voss, B. A.; Bara, J. E.; Gin, D. L.;* Noble, R. D.* “Physically Gelled Supported Ionic Liquid Membranes with Enhanced CO₂ Gas Transport,” *Chem. Mater.* **2009**, *21* (14), 3027–3029.
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- Organic Electrolyte-Filled Lyotropic Liquid-Crystal Assembly,” *J. Am. Chem. Soc.* **2009**, *131* (44), 15972–15973.
- ‡(Article highlighted on-line with a write-up as a significant new discovery by the Green Car Congress on October 20, 2009 (<http://www.greencarcongress.com/2009/10/kerr-20091020.html#comments>); This work also featured as a *Highlights* article in *Angew. Chem. Int. Ed.* **2010**, *49* (43), 7847–7848.
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 48. Bara, J. E.; Gin, D. L.; LaFrate, A. L.; Noble, R. D.; Carlisle, T. K.; Hatakeyama, E. S.; Kerr, R. L. “Imidazolium-based Room-temperature Ionic Liquids, Polymers, Monomers, and Membranes Containing the Same,” U.S. Patent 8,926,732, issued January 6, 2015. **(Licensed by Total, S.A., November 2015)**
 49. Gin, D. L.; Carlisle, T. K.; Noble, R. D.; Nicodemus, G. D.; McDanel, W. M.; Cowan, M. G. “Composites Comprising Novel RTIL-Based Polymers, and Methods of Making and Using Same,” U.S. Patent Application 20150209776, filed January 9, 2015; U.S. Patent Application Publication US 2015/0209776 A1, published July 30, 2015. (National Phase of

PCT/US2013/049765 that was filed July 9, 2013.) **(Licensed by Total, S.A., November 2015)**

50. Cowan, M. G.; Kohno, Y.; Gin, D. L., Noble, R. D. “Novel Oxygen Gas-Binding Ionic Liquid Systems, and Methods of Making and Using Same,” Provisional U.S. Patent Application No. 62/206,504, filed August 18, 2015.
51. Hill, M. R.; Lau, C. H.; Konstas, K.; Nguyen, P. T.; Gin, D.; Noble, R. D. “Mixed Matrix Polymer Compositions,” U.S. Patent Application 14/647,295 (publication number: US 2015/0283520-A1), published October 8, 2015.
52. Cowan, M. G.; Kohno, Y.; Gin, D. L., Noble, R. D. “Novel Metal-Containing Ionic Liquids and Methods Using Same,” Provisional U. S. Patent Application 62/247,639, filed October 28, 2015.
53. Bara, J. E.; Gin, D. L.; LaFrate, A. L.; Noble, R. D.; Carlisle, T. K.; Hatakeyama, E. S.; Kerr, R. L. “Imidazolium-based Room-temperature Ionic Liquids, Polymers, Monomers, and Membranes Containing the Same,” U.S. Patent Application Publication US2016/0175764 A1, published June 23, 2016.
54. Bailey, T. S.; Guo, C.; Lewis, J. T.; Fischenich, K.; Donahue, T. H.; Wijayasekara, D.; Cowan, M. G.; Gin D. L.; Noble, R. D. “Thermoplastic Elastomer Hydrogels,” PCT Patent Application No.: PCT/US16/64956, filed December 4, 2016 (via Colorado State University as a joint application with CU Boulder).
55. Gin, D. L.; Noble, R. D.; Dischinger, S M.; Carter, B. M. “Polymerized Lyotropic Liquid Crystal-Based Nanofiltration Membranes with Reversibly Tuned Pore Size and Selectivity, and Methods Using Same,” Provisional U. S. Patent Application 62/450,776, filed January 26, 2017.
56. Linden, K. G.; Rosenblum, J.; Dischinger, S. M.; Gin, D. L.; Noble, R. D. “Methods and Devices for Treating Wastewaters,” Provisional U.S. Patent Application 62/459,307, filed February 15, 2017.
57. Linden, K. G.; Rosenblum, J.; Dischinger, S. M.; Gin, D. L.; Noble, R. D. “Methods and Devices for Treating Wastewaters,” Provisional U.S. Patent Application 62/459,946, filed February 16, 2017.
58. Cowan, M. G.; Kohno, Y.; Gin, D. L.; Noble, R. D. “Novel Metal-Containing Ionic Liquids and Methods Using Same,” PCT Patent Application WO 2017/075242 A1, published May 4, 2017.
59. Bailey, T. S.; Guo, C.; Lewis, J. T.; Fischenich, K.; Donahue, T. H.; Wijayasekara, D.; Cowan, M. G.; Gin D. L.; Noble, R. D. “Thermoplastic Elastomer Hydrogels,” PCT Patent Application WO2017/096367 A1, published June 8, 2017.
60. Gin, D. L.; Carlisle, T. K.; Noble, R. D.; Nicodemus, G. D.; McDanel, W. M., Cowan, M. G., “Composites Comprising Novel RTIL-based Polymers, and Methods of Making and Using Same,” U.S. Patent 9,687,840, issued July 27, 2017.

61. Hill, M. R.; Lau, C. H.; Konstas, K.; Nguyen, P. T.; Gin, D.; Noble, R. D. “Mixed Matrix Polymer Compositions,” U.S. Patent 9,815,032, issued November 14, 2017.
62. Gin, D. L.; Noble, R. D.; Dischinger, S. M.; Carter, B. M. “Polymerized Lyotropic Liquid Crystal-Based Nanofiltration Membranes with Reversibly Tuned Pore Size and Selectivity, and Methods Using Same,” U.S. Patent Application 15/879,902, filed January 25, 2018.
63. Gin, D. L.; Dunn, C. A.; Singh, Z. V.; Noble, R. D. “Curable Poly(RTIL)-Based Mixed-Matrix Membranes and Methods for Using Same,” Provisional U.S. Patent Application 62/677,223, filed May 29, 2018.
64. Martin, R. M.; Gin, D. L.; Noble, R. D.; Nguyen, V. T.; Elliott, B. J. “Diene Gemini Polymerizable Surfactants with Mixed Cis and Trans Isomers that Form Bicontinuous Cubic Phases,” Provisional U.S. Patent Application 62/695,382, filed July 9, 2018.
65. Gin, D. L.; Dwulet, G. E. “Nanoporous Lyotropic Liquid Crystal Polymer Resin for Molecular Size-Selective Catalytic Alcohol Oxidation,” Provisional U.S. Patent Application 62/699,865, filed July 18, 2018.
66. Gin, D. L.; Noble, R. D.; Dischinger, S. M.; Carter, B. M. “Polymerized Lyotropic Liquid Crystal-Based Nanofiltration Membranes with Reversibly Tuned Pore Size and Selectivity, and Methods Using Same,” U.S. Patent Application Publication US 2018/0208728 A1, published July 26, 2018.
67. Hill, M. R.; Lau, C. H.; Konstas, K.; Nguyen, P. T.; Gin, D.; Noble, R. D. “Mixed Matrix Polymer Compositions,” Australian Patent 2013350331, issued November 15, 2018.
68. Bailey, T. S.; Guo, C.; Lewis, J. T.; Fischenich, K.; Donahue, T. H.; Wijayasekara, D.; Cowan, M. G.; Gin D. L.; Noble, R. D. “Thermoplastic Elastomer Hydrogels,” U.S. Patent Application Publication US 2019/0031835 A1, published January 31, 2019.
69. Bailey, T. S.; Guo, C.; Lewis, J. T.; Fischenich, K.; Donahue, T. H.; Wijayasekara, D.; Cowan, M. G.; Gin D. L.; Noble, R. D. “Thermoplastic Elastomer Hydrogels,” U.S. Patent US 10,428,185 B2, issued October 1, 2019.
70. Gin, D. L.; Dunn, C. A.; Singh, Z. V.; Noble, R. D. “Curable Poly(RTIL)-Based Mixed-Matrix Membranes and Methods for Using Same,” International Patent Application WO 2019/232074 A1, published December 5, 2019.
71. Gin, D. L.; Dunn, C. A.; Singh, Z. V.; Noble, R. D. “Curable Poly(RTIL)-Based Mixed-Matrix Membranes and Methods for Using Same,” U.S. Patent Application 17/058,821, filed November 25, 2020.
72. Gin, D. L.; Noble, R. D.; Dischinger, S. M.; Carter, B. M. “Polymerized Lyotropic Liquid Crystal-Based Nanofiltration Membranes with Reversibly Tuned Pore Size and Selectivity, and Methods Using Same,” U.S. Patent 11,046,826, issued June 29, 2021.
73. Gin, D. L.; Dunn, C. A.; Singh, Z. V.; Noble, R. D. “Curable Poly(RTIL)-Based Mixed-Matrix Membranes and Methods for Using Same,” U.S. Patent Application Publication US 2021/0205762 A1, published July 28, 2021.

74. Gin, D. L.; Dunn, C. A.; Noble, R. D.; Ben Hassine, H. “Cross-linked Mixed-Matrix Membranes, Composition and Method,” International Patent Application PCT/IB2021/000533, filed July 29, 2021.
75. Gin, D. L.; Dunn, C. A.; Noble, R. D.; Ben Hassine, H. “Mixed-Matrix Membranes, Composition and Method,” International Patent Application PCT/IB2021/000536, filed July 29, 2021.
76. Noble, R. D.; Karunaweera, C.; Gin, D. L. “Ionic Liquid-based Composite Membranes Using Functional Crosslinkers,” Provisional U.S. Patent Application 63/237,694, filed August 27, 2021.
77. Gin, D.; Li, P.; Osuji, C.; Imran, O. “Stable Cross-linked Lyotropic Gyroid Mesophases from Single-head/Single-tail Cross-linkable Monomers,” Provisional U.S. Patent Application 63/246,143, filed September 20, 2021.
78. Noble, R. D.; Karunaweera, C.; Gin, D. L. “Ionic Liquid-based Composite Membranes Using Functional Crosslinkers,” Provisional U.S. Patent Application 63/278,384, filed November 11, 2021. (Second filing of invention of the same name but with additional intellectual property information included.)
79. Noble, R. D.; Karunaweera, C.; Gin, D. L. “Ionic Liquid-based Composite Membranes Using Functional Cross-linkers,” PCT Patent Application PCT/US2022/041698, filed August 26, 2022.
80. Gin, D.; Li, P.; Osuji, C.; Imran, O. “Lyotropic Gyroid Mesophase Compositions, Polymer Compositions Comprising the Same, Methods of Preparation Thereof, and Methods of Using the Same,” U.S. Patent Application 17/949,072, filed September 20, 2022.
81. Noble, R. D.; Karunaweera, C.; Gin, D. L. “Ionic Liquid-based Composite Membranes Using Functional Cross-linkers,” PCT Patent Application WO 2023/028323 A1, published March 2, 2023.

Presentations

I. Invited Presentations:

(a) Invited Lectures at Universities

- (1) University of California, Berkeley (Chemistry), September 30, 1997.
- (2) University of California, Davis (Chemistry), October 14, 1997.
- (3) University of California, Berkeley (Chemical Engineering), October 29, 1997.
- (4) Drexel University (Chemistry), November 3, 1997.
- (5) University of Pennsylvania (Chemistry), November 4, 1997.
- (6) Northwestern University (Chemistry), February 5, 1998.
- (7) University of California, San Diego (Chemistry), April 20, 1998.
- (8) University of Minnesota (Chemistry), May 21, 1998.
- (9) Technische Universität (Chemistry and Physics), Graz, Austria, July 27, 1998.
- (10) University of California, Los Angeles (Chemistry), December 10, 1998.
- (11) University of California, Irvine (Chemistry), February 10, 1999.
- (12) University of Illinois, Urbana–Champaign (Chemistry), February 17, 1999.
- (13) University of Virginia (Chemistry), February 19, 1999.
- (14) Cornell University (Chemistry), February 22, 1999.
- (15) Massachusetts Institute of Technology (Chemistry), February 24, 1999.
- (16) University of California, Santa Barbara (Chemistry), March 11, 1999.
- (17) McGill University, Montréal, Canada (Chemistry), March 16, 1999.
- (18) Université de Montréal, Montréal, Canada (Chemistry), March 17, 1999.
- (19) Laval University, Quebec City, Canada (Chemistry), March 18, 1999.
- (20) Stanford University (Chemistry), April 22, 1999.
- (21) University of Chicago (Chemistry), May 14, 1999.

- (22) California Institute of Technology (Chemistry), May 18, 1999.
- (23) University of California, Riverside (Chemistry), May 19, 1999.
- (24) University of Nevada, Reno (Chemistry), October 1, 1999.
- (25) University of California, Riverside (Chemistry), January 25, 2000.
- (26) Case Western Reserve University (Macromolecular Science), February 25, 2000.
- (27) Rice University (Chemistry), March 10, 2000.
- (28) University of Utah (Chemistry), April 28, 2000.
- (29) University of Alberta, Canada (Chemistry), May 11, 2000.
- (30) McGill University, Montréal, Canada (Chemistry), August 10, 2000.
- (31) University of Colorado, Boulder (Chemistry), September 5, 2000.
- (32) Case Western Reserve University (Macromolecular Science), November 21, 2000.
- (33) Colorado State University (Chemistry), December 4, 2000.
- (34) University of Florida (Chemistry), January 11, 2001.
- (35) University of Colorado, Boulder (Chemical Engineering), February 13, 2001.
- (36) Purdue University (Chemistry), February 23, 2001.
- (37) Emory University (Chemistry), February 26, 2001.
- (38) Jilin University, Changchun, P.R. China (Supramol. Chemistry), September 25, 2001.
- (39) University of Denver (Chemistry), September 26, 2002.
- (40) Georgia Institute of Technology (Chemistry), October 24, 2002.
- (41) University of Colorado, Boulder (Chemistry), April 29, 2003.
- (42) University of Wyoming (Chemistry), February 20, 2004.
- (43) Princeton University (Chemical Engineering), October 6, 2004.
- (44) University of Tokyo, Japan (Chemistry and Biotechnology), August 1, 2005.
- (45) University of Iowa (Chemical Engineering), September 29, 2005.
- (46) Colorado School of Mines (Chemistry), January 27, 2006.

- (47) University of Toledo (Chemistry), February 22, 2006.
- (48) Northwestern University (Catalysis Center), November 20, 2006.
- (49) Technische Universiteit Eindhoven (Chem. Eng. & Chemistry), November 29, 2007.
- (50) University of Wisconsin, Madison (Chemistry), February 28, 2008.
- (51) Colorado State University (Chemical Engineering), May 1, 2008.
- (52) Louisiana State University (Chemistry), November 13, 2009.
- (53) University of Denver (Chemistry & Biochemistry), September 16, 2010.
- (54) University of Colorado, Boulder (Chemistry), September 21, 2010.
- (55) State University of New York at Buffalo (Chem. & Biochem.), January 28, 2011.
- (56) University of Utah (Chemistry), September 26, 2011.
- (57) University of Tokyo, Japan (Chemistry and Biotechnology), July 6, 2012.
- (58) University of Notre Dame (Chemistry), November 8, 2012.
- (59) Yale University, (Chem. & Environ. Eng.), October 2, 2013.
- (60) University of California, Berkeley, (Mater. Sci. & Eng.), October 17, 2013.
- (61) Colorado School of Mines, (Chemical Engineering), November 8, 2013.
- (62) University of Nebraska, Lincoln, (Chem. & Biol. Eng.), March 7, 2014.
- (63) Université Paul Sabatier, France, (Lab. de Génie Chimique), March 24, 2014.
- (64) Université Paul Sabatier, France, (Lab. de Génie Chimique), March 25, 2014.
- (65) Ecole Nationale Supérieure de Chimie de Montpellier, (Chemistry), March 27, 2014.
- (66) Université Montpellier 2, France, (Institut Européen des Membranes), March 28, 2014.
- (67) Colorado State University (Chemistry), May 2, 2014.
- (68) Technische Universiteit Eindhoven, The Netherlands, (Chemistry), June 13, 2016.
- (69) Tufts University (Chem. & Biol. Eng.), October 15, 2018.
- (70) University of Colorado Boulder (Chem. & Biochem. Club), October 20, 2020.
- (71) University of Colorado Boulder (Mater. & Nanosci. seminar), September 20, 2021.

(b) Invited Lectures at Professional Meetings

- (1) Third Annual National Science Foundation Materials Chemistry Workshop, San Jose, CA, October 19, 1995.
- (2) Golden Gate Polymer Forum, Mountain View, CA, June 24, 1997.
- (3) Symposium on "Supramolecular Transition-Metal Chemistry: Organic Assemblies and Liquid Crystals" at the 214th American Chemical Society National Meeting, Las Vegas, NV, September 9, 1997.
- (4) Symposium on "Organic Materials for Electronic or Supramolecular Applications" at the American Chemical Society 33rd Western Regional Meeting, Irvine, CA, October 22, 1997.
- (5) Symposium on "Novel Inorganic Materials" at the American Chemical Society 33rd Western Regional Meeting, Irvine, CA, October 23, 1997.
- (6) National Science Foundation Physical Organic Chemistry Workshop, Logan, OH, June 20–24, 1998.
- (7) Symposium on "Organic–Inorganic Nanocomposites" at the 5th International Conference on Composites Engineering, Las Vegas, NV, July 7, 1998.
- (8) International Conference on Science and Technology of Synthetic Metals, Montpellier, France, July 16, 1998.
- (9) International Liquid Crystal Conference, Strasbourg, France, July 22, 1998.
- (10) Symposium on "Functional, Nanostructured Composites" at the 216th American Chemical Society National Meeting, Boston, MA, August 25, 1998.
- (11) "International Symposium on Synthesis of New Polymeric Materials" at the 217th American Chemical Society National Meeting, Anaheim, CA, March 21, 1999.
- (12) Symposium on "Nanostructured Organic Materials: Synthesis, Characterization, and Application" at the 217th American Chemical Society National Meeting, Anaheim, CA, March 22, 1999.
- (13) Symposium on "Luminescent Organic Materials" at the Spring 1999 Materials Research Society Meeting, San Francisco, CA, April 6, 1999.
- (14) Gordon Research Conference on "Liquid Crystals," Tilton, NH, June 9, 1999.
- (15) Symposium on "Polymers and Liquid Crystals: Polymerization in and of Liquid Crystals" at the 218th American Chemical Society National Meeting, New Orleans, LA, August 26, 1999.

- (16) Seventh Annual National Science Foundation Materials Chemistry Workshop, Minneapolis, MN, October 14, 1999.
- (17) U.S. Army Research Office Workshop on Templated Nanostructure Synthesis and Reactivity, Aberdeen Proving Grounds, MD, October 19–21, 1999.
- (18) Symposium on "Polymer Nanocomposites" at the 219th American Chemical Society National Meeting, San Francisco, CA, March 29, 2000.
- (19) Symposium on "Molecularly Ordered Networks" at the 219th American Chemical Society National Meeting, San Francisco, CA, March 29, 2000.
- (20) Symposium on "Synthetic Macromolecules with Higher Structural Order" at the 219th American Chemical Society National Meeting, San Francisco, CA, March 30, 2000.
- (21) Seventh International Seminar on the Technology of Inherently Conductive Polymers, Napa, CA, June 8, 2000.
- (22) International Conference on Science and Technology of Synthetic Metals, Badgastein, Austria, July 20, 2000.
- (23) Symposium on "Macromolecular Synthesis by Selective Chemical Modification" at the 220th American Chemical Society National Meeting, Washington, DC, August 21, 2000.
- (24) Symposium on "Functional Nanostructures" at the 220th American Chemical Society National Meeting, Washington, DC, August 21, 2000.
- (25) Second International Symposium on Hyperstructured Organic Materials, Seoul, South Korea, October 11, 2000.
- (26) Session on "Supramolecular Chemistry" at the 3rd Annual National Academy of Sciences Chinese–American Frontiers of Science symposium, Irvine, CA, October 22, 2000.
- (27) Conference on "Novel Materials for Electronics Miniaturization" sponsored by the Knowledge Foundation, Inc., San Francisco, CA, November 3, 2000.
- (28) Symposium on "Advanced Catalytic Materials" at the Fall 2000 Materials Research Society Meeting, Boston, MA, November 29, 2000.
- (29) International symposium on "Polymers in the Marine Environment" at the POLY Millennial 2000 Meeting, Waikoloa, HI, December 12, 2000.
- (30) International symposium on "New Developments in Polymer Synthesis" at the POLY Millennial 2000 Meeting, Waikoloa, HI, December 12, 2000.
- (31) Session on "Advanced Catalytic Materials" at the 4th Annual National Academy of Sciences Chinese–American Frontiers of Science symposium, Beijing, China, September 21–23, 2001.

- (32) NSF I/UCRC Photopolymerization Center Meeting, Iowa City, IA, January 15, 2002.
- (33) Gordon Research Conference on "Membranes: Materials and Processes," New London, NH, August 5, 2002.
- (34) Symposium on "Organic Methodologies in the Selective Synthesis of Small Molecules and Materials" in the Division of Organic Chemistry, 224th American Chemical Society National Meeting, Boston, MA, August 18, 2002.
- (35) Session on "Nanostructured Fluids" at the 2002 Fall AIChE Annual Meeting, Indianapolis, IN, November 7, 2002.
- (36) Symposium on "Polymer-templated Nanostructures" at the March 2003 American Physical Society Meeting, Austin, TX, March 3, 2003.
- (37) Gordon Research Conference on "Chemistry of Supramolecules and Assemblies," Andover, NH, July 9, 2003.
- (38) Symposium on "Supramolecular Chemistry and Self-Assembly," at the 39th IUPAC Congress and 86th Conference of the Canadian Society for Chemistry, Ottawa, ON, Canada, August 14, 2003.
- (39) Symposium on "Polymer Chemistry in Nanotechnology" in the Division of Polymer Chemistry, 226th American Chemical Society National Meeting, New York, NY, September 8, 2003.
- (40) Symposium on "Self-Assembled Materials" at the International Union of Materials Research Societies 8th International Conference on Advanced Materials, Yokohama, Japan, October 12, 2003.
- (41) Workshop on "Advanced Functional Mesoporous Materials", University of Tokyo, Tokyo, Japan, October 14, 2003.
- (42) Workshop on "Frontiers in Liquid Crystals and Molecular Self-Assembly", University of Colorado, Boulder, CO, June 11, 2004.
- (43) Session on "Novel Membrane Processes" at the 15th Annual North American Membrane Society Meeting, Honolulu, HI, June 30, 2004.
- (44) Symposium on "Nanotechnology in Catalysis III" at the 228th American Chemical Society National Meeting, Philadelphia, PA, August 24, 2004.
- (45) Fourth NSF Workshop on "Complex Fluids: Biomolecular and Biomimetic Self-assembly," Mérida, Yucatán, Mexico, January 5, 2005.
- (46) CU Boulder NANO Initiative meeting, Boulder, CO, February 11, 2005.
- (47) Symposium on "Dynamic, Self-Organized Systems in Multifunctional Nanomaterials and Nanostructures" at the Spring 2005 Materials Research Society Meeting, San

Francisco, CA, March 31, 2005.

- (48) Symposium on “The Fusion of Macromolecular, Supramolecular, and Organic Chemistry” at the Society of Polymer Science Japan’s 8th International Polymer Conference, Fukuoka, Japan, July 29, 2005.
- (72) Session on “Chemical Engineering in Materials Technology” at the China/USA/Japan Joint Chemical Engineering Conference, Beijing, China, October 11, 2005.
- (73) Session on “Self-Assembled Materials and Liquid Crystals (#31)” at the 2005 International Chemical Congress of Pacific Basin Societies, Honolulu, HI, December 16, 2005.
- (74) Session on “Chemistry and Materials Science of Advanced Membranes Based on Polymers and Polymer/Inorganic Composites (#125)” at the 2005 International Chemical Congress of Pacific Basin Societies, Honolulu, HI, December 20, 2005.
- (75) Session on “Nanostructured Polymer Materials” at the 2006 International Symposium on Polymer Chemistry, Dalian, P. R. China, June 8, 2006.
- (76) Warwick 2006 Macro Group UK International Conference on Polymer Synthesis. Warwick, UK, July 31, 2006.
- (77) Session on “Materials Chemistry” at the 19th Rocky Mountain Regional American Chemical Society Meeting, Tucson, AZ, October 16, 2006.
- (78) American Chemical Society Colorado Section Award talk, Boulder, CO, January 22, 2007.
- (79) “Symposium in Honor of Richard Noble: I&EC Fellow Award” at the 233rd American Chemical Society National Meeting, Chicago, IL, March 25, 2007.
- (80) Symposium on “Recent Advances in Photopolymerization” at the Spring 2007 Materials Research Society Meeting, San Francisco, CA, April 11, 2007.
- (81) Symposium on “Polymers and Liquid Crystals” at the 234th American Chemical Society National Meeting, Boston, MA, August 21, 2007.
- (82) Symposium on “Nanoscience and Nanotechnology for Chemical and Biological Defense” at the 234th American Chemical Society National Meeting, Boston, MA, August 22, 2007.
- (83) 83rd Annual Multidisciplinary Meeting of the American Association for the Advancement of Science (AAAS), Southwestern and Rocky Mountain (SWARM) Division, Albuquerque, NM, April 11, 2008.
- (84) Session on “Design of Nanoporous Materials” at the Nanoporous Materials 5 Conference, Vancouver, BC, Canada, May 26, 2008.
- (85) Session on “Nanostructured Membranes II” at the 2008 International Congress on

Membranes and Membrane Processes, Honolulu, HI, July 15, 2008.

- (86) Session on “Advances in Membrane Materials and Modeling” at the 2008 International Water Association North American Membrane Conference, University of Massachusetts, Amherst, MA, August 10, 2008.
- (87) Session on “Molecular Self-Assembly: New Advances and Applications. Towards Applications” at the 236th American Chemical Society National Meeting, Philadelphia, PA, August 20, 2008.
- (88) Session on “Ionic Liquids: From Knowledge to Application” at the 236th American Chemical Society National Meeting, Philadelphia, PA, August 17, 2008.
- (89) Session on “Novel, Multifunctional Materials” at the 2008 Chemical & Biological Defense Physical Sciences & Technology Conference, New Orleans, LA, November 19, 2008.
- (90) U.S. Army Research Office Workshop on Colloid and Surfactant Science Basic Research (Organic and Inorganic Chemistry Division), Napa, CA, March 10, 2009.
- (91) “ACS Award in Applied Polymer Science: Symposium in Honor of Benny D. Freeman” at the 237th American Chemical Society National Meeting, Salt Lake City, UT, March 23, 2009.
- (92) Session on “Liquid Crystalline and Structured Systems” in the “Polymerization in Nanostructured and Nanocomposite Systems” symposium at the 237th American Chemical Society National Meeting, Salt Lake City, UT, March 25, 2009.
- (93) Symposium on “Novel Applications of Supramolecular Materials” at the 237th American Chemical Society National Meeting, Salt Lake City, UT, March 26, 2009.
- (94) Keynote lecture at the Nanotechnology Symposium (session 10) at the 8th World Congress of Chemical Engineering, Montreal, QC, Canada, August 27, 2009.
- (95) Army Research Office / Defense Threat Reduction Agency working group meeting, Arlington, VA, September 11, 2009.
- (96) Symposium on “Liquid Crystalline Materials” at the 93rd Canadian Chemistry Conference, Toronto, ON, Canada, June 2, 2010.
- (97) 17th International Symposium on Molten Salts and Ionic Liquids at the 218th Electrochemical Society Meeting, Las Vegas, NV, October 11, 2010.
- (98) Session on “Novel Materials for CB Protection” at the 2010 Defense Threat Reduction Agency CBD S&T Conference, Orlando, FL, November 17, 2010.
- (99) Symposium on “New Materials and Concepts for Next Generation Membranes” at the 2010 International Chemical Congress of Pacific Basin Societies, Honolulu, HI, Dec. 15, 2010.

- (100) Symposium on “Liquid Crystals in Materials Chemistry” at the 2010 International Chemical Congress of Pacific Basin Societies, Honolulu, HI, Dec. 15, 2010.
- (101) Symposium on “Molecular-based Ordered Materials Formed Through Self-Organization” at the 2010 International Chemical Congress of Pacific Basin Societies, Honolulu, HI, Dec. 19, 2010.
- (102) Symposium on “Function Through Macromolecular Assembly” at the 242nd American Chemical Society National Meeting, Denver, CO, August 30, 2011.
- (103) Symposium on “Transport Properties of Polymer Nanocomposites II” at the Fall 2011 Materials Research Society Meeting, Boston, MA, November 29, 2011.
- (104) Defense Threat Reduction Agency Brainstorming Workshop on “Multifunctional Materials for Directed Agent Transport and Concentration,” Cambridge, MA, November 29, 2011.
- (105) Symposium entitled “Frontiers in Polymer Materials Science: Celebrating the PMSE Fellows Program” at the 243rd American Chemical Society National Meeting, San Diego, CA, March 27, 2012.
- (106) Symposium on “Novel Organic and Metal-Organic Porous Materials” at the 244th American Chemical Society National Meeting, Philadelphia, PA, August 22, 2012.
- (107) Symposium on “Membrane Material Platforms and Concepts for Energy, Environment, and Medicinal Applications” at the Fall 2012 Materials Research Society Meeting, Boston, MA, November 28, 2012.
- (108) Symposium on “Polymers and Liquid Crystals” at the 245th American Chemical Society National Meeting, New Orleans, LA, April 8, 2013.
- (109) Chemical and Biological Defense Program Coatings Program Review, Falls Church, VA, October 23, 2013.
- (110) Symposium entitled “I&EC Fellow: Symposium in Honor of Benny Freeman” at the 247th American Chemical Society National Meeting, Dallas, TX, March 18, 2014.
- (111) Symposium entitled “Materials for Carbon Capture” at the Spring 2014 Materials Research Society Meeting, San Francisco, CA, April 24, 2014.
- (112) Session on “Ionic Liquids for Energy, Fuel, and Chemical Production” at the “Ionic Liquids: Solvents, Materials, or Medicines?” Gordon Research Conference, Newry, ME, August 19, 2014.
- (113) Oil and Gas Cleantech Challenge, 2014 Colorado Cleantech Industries Association Meeting, Denver, CO, October 2, 2014.
- (114) Symposium entitled “ACS Award in Separations Science and Technology: Symposium in Honor of Richard D. Noble,” at the 249th American Chemical Society National Meeting, Denver, CO, March 22, 2015.

- (115) Session entitled “Nanostructured Porous Polymers for Membrane Applications” in the “Nanostructured Porous Polymers: Synthesis, Properties, and Applications” symposium at the 249th American Chemical Society National Meeting, Denver, CO, March 22, 2015 (selected as “Best Presentation” of the session by organizers).
- (116) Symposium entitled “Emerging Membrane Materials for Sustainable Separations” at the Spring 2017 Materials Research Society Meeting, Phoenix, AZ, April, 19, 2017.
- (117) Symposium entitled “Herman F. Mark Young Scholar Award in Honor of Garret Miyake” at the 254th American Chemical Society National Meeting, Washington, DC, August 20, 2017.
- (118) Symposium entitled “Porous Polymers” at the 256th American Chemical Society National Meeting, Boston, MA, August 19, 2018.
- (119) Symposium entitled “Ionic Liquids in Polymer Science and Engineering: From Molecular Design to Energy & Beyond” at the 256th American Chemical Society National Meeting, Boston, MA, August 20, 2018.
- (120) Symposium entitled “Transport in Polymer Membranes” at the 257th American Chemical Society National Meeting, Orlando, FL, April 4, 2019.
- (121) Symposium entitled “Advanced Membranes for Energy-Efficient Molecular Separation and Ion Conduction” at the Fall 2019 Materials Research Society Meeting, Boston, MA, December, 4, 2019.
- (122) Symposium entitled “I&EC Division Early Career Fellow Symposium in Honor of Dr. Jason Bara” at the 261th American Chemical Society National Meeting, (virtual/remote meeting and talk format due to the COVID-19 pandemic), April 5, 2021.
- (123) Session entitled “Materials Discovery” at the Defense Threat Reduction Agency CBT Multifunctional Materials for Force Protection Science Review Meeting, (virtual/remote meeting and talk format due to the COVID-19 pandemic), November 17, 2021.

(c) Invited Lectures at Companies

- (1) Raychem Corporation, Menlo Park, CA, January 8, 1997.
- (2) 3M Company, St. Paul, MN, January 10, 1997.
- (3) Rohm and Haas Company, Spring House, PA, January 30, 1997.
- (4) Exxon Research and Engineering, Annandale, NJ, January 31, 1997.
- (5) Dow Chemical Company, Midland, MI, June 17, 1997.
- (6) 3M Company, St. Paul, MN, May 20, 1998.

- (7) DuPont CR&D (Carothers Polymer Lecturer), Wilmington, DE, March 3, 1999.
- (8) IBM Almaden Research Center, San Jose, CA, May 25, 1999.
- (9) Rohm and Haas Company, Spring House, PA, November 12, 1999.
- (10) DSM Research, Geleen, The Netherlands, July 25, 2000.
- (11) CoValent, Burlingame, CA, August 15, 2000.
- (12) Zettacore, Denver, CO, March 30, 2006.
- (13) DSM, Geleen, The Netherlands, August 8, 2006.
- (14) DSM, Geleen, The Netherlands, November 28, 2007.
- (15) 3M Company, St. Paul, MN, February 22, 2011.
- (16) Toray Industries, Otsu City, Japan, July 9, 2012.
- (17) Hutchinson, S.A., Chalette Sur Loing, France, March 31, 2014.
- (18) DSM, Geleen, The Netherlands, April 4, 2014.

(d) Invited Lectures at National Laboratories and Research Institutes

- (1) Los Alamos National Laboratory (division seminar), Los Alamos, NM, June 16, 2009.
- (2) National Renewal Energy Laboratory, Golden, CO, January 16, 2014.
- (3) U.S. Bureau of Reclamation, Denver, CO, November 6, 2014.
- (4) U.S. Army Natick Soldier Systems Center, Natick, MA, October 16, 2017.

II. Contributed Presentations (presenting author underlined)

- (1) Gray, D. H.; Gin, D. L. "Synthesis of Ordered Nanocomposites via a Monomer Self-Assembly Approach," poster presented at the 211th National Meeting of the American Chemical Society, New Orleans, LA, March, 1996.
- (2) Cooper, M. E.; Hoag, B. P.; Gin, D. L. "Design and Synthesis of Novel Fluorescent Chemosensors for Biologically Active Molecules," poster presented at the 213th National Meeting of the American Chemical Society, San Francisco, CA, April, 1997.
- (3) Baxter, B. C.; Gin, D. L. "Ordered Piezoelectric Networks via a Liquid-Crystalline

- Monomer Strategy: Design of the LC Monomer," poster presented at the 213th National Meeting of the American Chemical Society, San Francisco, CA, April, 1997.
- (4) Gray, D. H.; Gin, D. L. "Highly Ordered Polymer–Inorganic Nanocomposites via a Monomer Self-Assembly–In Situ Condensation Approach," poster presented at the 213th National Meeting of the American Chemical Society, San Francisco, CA, April, 1997.
 - (5) Fischer, W. M.; Gray, D. H.; Smith, R. C.; Gin, D. L. "Controlling Materials Architecture on the Nanometer-Scale: Composite Synthesis Using Lyotropic Liquid-Crystalline Monomers," poster presented at the 213th National Meeting of the American Chemical Society, San Francisco, CA, April, 1997.
 - (6) Smith, R. C.; Fischer, W. M.; Gin, D. L. "Lyotropic Liquid-Crystalline Template Formation of Composite Materials," poster presented at the 213th National Meeting of the American Chemical Society, San Francisco, CA, April, 1997.
 - (7) Gin, D. L.; Gray, D. H.; Smith, R. C.; Fischer, W. M.; Deng, H. "Synthesis of Highly Ordered Nanocomposites via Polymerizable Lyotropic Liquid Crystals," poster presented at the 5th North American Chemical Congress, Cancun, Mexico, November 13, 1997.
 - (8) Gray, D. H.; Deng, H.; Gin, D. L. "Tuning Nanocomposite Architecture Through Transition-Metal-Containing Lyotropic Liquid-Crystalline Monomers," poster presented at the 5th North American Chemical Congress, Cancun, Mexico, November 13, 1997.
 - (9) Smith, R. C.; Gin, D. L. "Synthetic and Structural Control of PPV Conducting Polymer Composites," poster presented at the 5th North American Chemical Congress, Cancun, Mexico, November 13, 1997.
 - (10) Hoag, B. P.; Gin, D. L. "Hexagonally Ordered, Fluorescent, Nanostructured Materials via Polymerizable Thermotropic Liquid Crystals," poster presented at the 5th North American Chemical Congress, Cancun, Mexico, November 13, 1997.
 - (11) Deng, H.; Gin, D. L. "Preparation and Polymerization of Lyotropic Liquid Crystals Containing Transition-Metals and Lanthanide Cations in the Inverted Hexagonal Phase," talk presented at the 215th National Meeting of the American Chemical Society, Dallas, TX, March 31, 1998.
 - (12) Markart, P.; Zojer, E.; Tasch, S.; Smith, R.; Gin, D.; Leising, G. "Device Characteristics of Nanostructured Poly(*p*-phenylvinylene)," poster presented at the International Conference on Science and Technology of Synthetic Metals, Montpellier, France, July 17, 1998.
 - (13) Resel, R.; Leising, G.; Markart, P.; Kreichbaum, M.; Laggner, P.; Smith, R.; Gin, D. "Structural Properties of Nanocomposite Materials Based on a Lyotropic Liquid Crystal," poster presented at the International Conference on Science and Technology of Synthetic Metals, Montpellier, France, July 17, 1998.

- (14) Zojer, E.; Markart, P.; List, E. J. W.; Graupner, W.; Smith, R.; Leising, G.; Shinar, J.; Gin, D. "Photophysical Properties of Nanostructured PPV-Composites," poster presented at the International Conference on Science and Technology of Synthetic Metals, Montpellier, France, July 17, 1998.
- (15) Baxter, B. C.; Gin, D. L. "Synthesis and Polymerization of a Chiral Liquid Crystal Diacrylate Exhibiting Smectic A* and C* Phases," poster presented at the 17th International Liquid Crystal Conference, Strasbourg, France, July 20, 1998.
- (16) Kim, E.; Gin, D. L. "Organic Analogs to Molecular Sieves: Heterogeneous Catalysis Studies with the Cross-linked Inverted Hexagonal Phase," poster presented at the 216th National Meeting of the American Chemical Society, Boston, MA, August 25, 1998.
- (17) Reppy, M. A.; Gin, D. L. "Molecular Imprinting via a Novel Acetal Linker for a Fluorescent Sensor," talk presented at the 216th National Meeting of the American Chemical Society, Boston, MA, August 23, 1998.
- (18) Gin, D. L.; Deng, H.; Gray, D. H.; Kim, E.; Smith, R. C. "Chemistry in the Cross-Linked Inverted Hexagonal Phase: Novel Composites and Heterogeneous Catalysts," poster presented at the 216th National Meeting of the American Chemical Society, Boston, MA, August 23, 1998.
- (19) Hoag, B. P.; Gin, D. L. "Fluorescent Phasmidic Liquid Crystals," poster presented at the 216th National Meeting of the American Chemical Society, Boston, MA, August 23, 1998.
- (20) Juang, E.; Schwartz, K. B.; Deng, H.; Reimer, J. A.; Gin, D. L. "Magnetic Alignment of Transition-Metal and Lanthanide Ion Doped Polymerizable Liquid Crystals," poster presented at the 217th American Chemical Society National Meeting, Anaheim, CA, March 23, 1999.
- (21) Ding, J. H.; Gin, D. L. "Metal-Binding and Palladium-Catalyzed Chemistry in Cross-linked Lyotropic Liquid Crystal Assemblies," talk presented at the 217th American Chemical Society National Meeting, Anaheim, CA, March 24, 1999.
- (22) Reppy, M. A.; Gray, D. H.; Gin, D. L. "A New Class of Modular Polymerizable Lyotropic Liquid Crystals for the Preparation of Nanostructured Materials," talk presented at the 218th American Chemical Society National Meeting, New Orleans, LA, August, 26, 1999.
- (23) Ding, J. H.; Gin, D. L. "Catalytically Active Pd⁰ Nanocomposites based on a Liquid Crystal Template," poster presented at the 218th American Chemical Society National Meeting, New Orleans, LA, August 22, 1999.
- (24) Pindzola, B. A.; Hoag, B. P.; Gin, D. L. "Development of Nanoscale Rods and Fibers from Polymerizable Lyotropic Liquid Crystal Templates," poster presented at the 218th American Chemical Society National Meeting, New Orleans, LA, August 22, 1999.

- (25) Gin, D. L.; Miller, S. A.; Hammond, S. R. "Acidic Pores in Organic Zeolite Analogs," poster presented at the 219th American Chemical Society National Meeting, San Francisco, CA, March 27, 2000.
- (26) Pindzola, B. A.; Gin, D. L. "Lyotropic Liquid Crystalline Phase Behavior of Some Polymerizable and Nonpolymerizable Alkyltrimethylphosphonium Bromide Salts," poster presented at the 219th American Chemical Society National Meeting, San Francisco, CA, March 27, 2000.
- (27) Gadermaier, C.; Lanzani, G.; Cerullo, G.; Hoag, B.; Leising, G.; De Silvestri, S.; Gin, D. "Stimulated Emission Dynamics in a Hexacatenar Liquid Crystal," poster presented at the International Conference on Science and Technology of Synthetic Metals, Badgastein, Austria, July 20, 2000.
- (28) Yonezawa, K.; Gin, D. L. "Matrix Isolation Effects of Water-soluble Poly(*p*-phenylenevinylene) in a Lyotropic Liquid Crystal Nanocomposite," poster presented at the 220th American Chemical Society National Meeting, Washington DC, August 20, 2000.
- (29) Zhou, W.-J.; Gin, D. L. "Synthesis and Characterization of Novel Nanostructured Polymers Enhanced by Hydrogen-Bonding using Liquid Crystal Monomers," talk presented at the 220th American Chemical Society National Meeting, Washington DC, August 21, 2000.
- (30) Laws, E. J.; Gin, D. L.; Reimer, J. A. "Deuterium-NMR Studies of Nanostructured Self-Assembling Molecules," poster presented at the 220th American Chemical Society National Meeting, Washington DC, August 21, 2000.
- (31) Hammond, S. R.; Zhou, W.-J.; Avlyanov, J. A.; Gin, D. L. "Lyotropic Liquid Crystal Acid Doping of Polyaniline," poster presented at the 221st American Chemical Society National Meeting, San Diego, CA, April 1, 2001.
- (32) Markevitch, D. Y.; Pindzola, B. A.; Gin, D. L. "Polymerization of the Regular Hexagonal Phase of Tetradecyltrimethylphosphonium Methacrylate," poster presented at the 221st American Chemical Society National Meeting, San Diego, CA, April 1, 2001.
- (33) Sentman, A. C.; Gin, D. L. "Modular Trimeric Liquid Crystals with Emissive Properties," poster presented at the 221st American Chemical Society National Meeting, San Diego, CA, April 1, 2001.
- (34) Gu, W.; Gin, D. L. "Synthesis and Characterization of New Lyotropic Liquid Crystals Bearing Sulfonic Acid Head Groups," poster presented at the 221th American Chemical Society National Meeting, San Diego, CA, April 2, 2001.
- (35) Sentman, A. C.; Gin, D. L. "Synthesis and Properties of Polymerizable Bent-core Mesogens," poster presented at the 2002 International Liquid Crystal Society meeting, Edinburg, Scotland, July 2, 2002.

- (36) Zhou, M.; Gin, D. L.; Noble, R. D. "Nanostructured Polymer Membranes Formed from Lyotropic Liquid Crystals," poster presented at the 2002 "Membranes: Materials and Processes" Gordon Research Conference, New London, NH, August 7, 2002.
- (37) Gin, D. L.; Dias, A.; Kidd, T. J. "Simultaneous Radical Polymerization/Sol-Gel Condensation of Lyotropic Liquid Crystal Monomers with Polar Silicate Precursors," poster presented at the 224th American Chemical Society National Meeting, Boston, MA, August 18, 2002.
- (38) Sentman, A. C.; Gin, D. L. "Synthesis and Characterization of Polymerizable Bent-Core Mesogens," talk presented at the 2002 Fall AIChE Annual Meeting, Indianapolis, IN, November 4, 2002.
- (39) Dias, A.; Kidd, T. J.; Gin, D. L. "Templated Synthesis of Nanostructured Organic/Silicated Composites using Polymerizable Lyotropic LC Monomers," talk presented at the 2002 Fall AIChE Annual Meeting, Indianapolis, IN, November 7, 2002.
- (40) Gin, D. L.; Xu, Y.; Jin, J. "Nanostructured Polymer Networks for Heterogeneous Acid Catalysis," talk presented at the 2002 Fall AIChE Annual Meeting, Indianapolis, IN, November 7, 2002.
- (41) Jin, J.; Nguyen, V.; Lu, X.; Elliott, B. J.; Gin, D. L. "Lyotropic Liquid Crystal–Butyl Rubber Blended Nanomaterials," poster presented at the 226th American Chemical Society National Meeting, New York, NY, September 9, 2003.
- (42) Xu, Y.; Gin, D. L. "Cross-linked Nanostructured Lyotropic Liquid Crystal Networks for Heterogeneous Catalysis," talk presented at the 227th American Chemical Society National Meeting, Anaheim, CA, March 28, 2004.
- (43) Lu, X.; Elliott, B.; Gin, D. L. "Crosslinkable Bicontinuous Cubic Assemblies via Mixtures of Gemini Amphiphile and Butyl Rubber," poster presented at the 227th American Chemical Society National Meeting, Anaheim, CA, March 29, 2004.
- (44) Shailaja, J.; Gin, D. L. "Catalytic Oxidations in Lyotropic Liquid-Crystalline Matrices," poster presented at the 227th American Chemical Society National Meeting, Anaheim, CA, March 30, 2004.
- (45) Pecinovsky, C. S.; Gin, D. L. "Development of a Heterogeneous, Enantioselective Diels-Alder Catalyst Using a Polymerizable, H-bonded Lyotropic Liquid Crystal as a Nanostructured Support," poster presented at the 227th American Chemical Society National Meeting, Anaheim, CA, March 30, 2004.
- (46) Gin, D. L.; Jin, J.; Nguyen, V.; Lu, X.; Elliott, B. J. " Cross-linked Lyotropic Liquid Crystal–Butyl Rubber Composites: Promising 'Breathable' Barrier Materials for Chemical Protection Applications," poster presented at the 15th Annual North American Membrane Society Meeting, Honolulu, HI, June 28, 2004.
- (47) Gin, D. L.; Xu, Y.; Gu, W.; Pecinovsky, C. S.; Jin, J. "Design of Catalytically Active

- Lyotropic Liquid Crystal Assemblies," poster presented at the 2004 International Liquid Crystal Conference, Ljubljana, Slovenia, July 6, 2004.
- (48) Shailaja, J.; Gin, D. L. "Liquid Crystalline Matrices as Chiral Receptors, Molecular Sensors, and Nano-filtration Membranes," poster presented at the 228th American Chemical Society National Meeting, Philadelphia, PA, August 22, 2004.
- (49) Jin, J.; Gin, D. L. "Design of Cross-linked Lyotropic Liquid Crystal Assemblies Containing Living/Controlled Radical Polymerization Catalysts", poster presented at the 228th American Chemical Society National Meeting, Philadelphia, PA, August 23, 2004.
- (50) Gin, D. L.; Gu, W.; Xu, Y.; Pecinovsky, C. S.; Jin, J. "Nanostructured, Heterogeneous Organic Catalysts via the Polymerization of Functional Lyotropic Liquid Crystal Assemblies", talk presented at the symposium on "Nanotechnology in Catalysis III" at the 228th American Chemical Society National Meeting, Philadelphia, PA, August 24, 2004.
- (51) Elliott, B. J.; Gin, D. L. "Nanostructured Polymeric Heterogeneous Catalyst for Industrial Applications," poster presented in the session on "Kinetics, Catalysis, and Reaction Engineering" at the Fall 2004 American Institute of Chemical Engineers national meeting, Austin, TX, November 10, 2004.
- (52) Xu, Y.; Elliott, B. J.; Gin, D. L. " Nanostructured Lyotropic Liquid Crystal Solid Acid Resins for Heterogeneous Catalysis," poster presented at the 230th American Chemical Society National Meeting, Washington, DC, August 28, 2005.
- (53) Lu, X.; Jin, J.; Nguyen, V.; Elliott, B. J.; Gin, D. L. "Lyotropic Liquid Crystal–Butyl Rubber Nanocomposites for Chemical Agent Protection," poster presented at the 230th American Chemical Society National Meeting, Washington, DC, August 30, 2005.
- (54) Sessler, S. J.; Nemade, P.; Gin, D. "Comparison of Ion Selectivity and Flux Properties between Commercial and Lyotropic Liquid Crystal Membranes," poster presented at the 2005 Fall AIChE Annual Meeting, Cincinnati, OH, October 31, 2005.
- (55) Nemade, P. R.; Gin, D. L. "Evaluation of Nanoporous Lyotropic Liquid Crystal Polymer Membranes for Reverse Osmosis," talk presented at the 2005 Fall AIChE Annual Meeting, Cincinnati, OH, November 2, 2005.
- (56) Zeng, X.; Gin, D. L. "Protonation-induced Lyotropic Liquid Crystal Assembly of Cross-linkable Monomers Containing Protein Anti-fouling Functional Groups," poster presented at the 231st American Chemical Society National Meeting, Atlanta, GA, March 27, 2006.
- (57) Zeng, X.; Braman, C.; Gin, D. L.; Freeman, B. D. "Novel Functional Membrane Coating for Protein Anti-fouling: Design, Synthesis, and Characterization," poster presented at the 231st American Chemical Society National Meeting, Atlanta, GA, March 28, 2006.

- (58) Seo, W.; Gin, D. L.; Kerr, R. L. "Design of Nanostructured Fluorescent Polymer Chemosensors Based on Liquid Crystal Starting Materials," poster presented at the 231st American Chemical Society National Meeting, Atlanta, GA, March 29, 2006.
- (59) Zhou, M.; Lu, X.; Noble, R. D.; Gin, D. L. "Polymer Membranes with Lyotropic Liquid Crystals Structures for Molecular-size Selective Aqueous Nanofiltration," poster presented at the North American Membrane Society Annual Meeting, Chicago, IL, May 17, 2006.
- (60) Zhou, M.; Lu, X.; Noble, R. D.; Gin, D. L. "Polymer Membranes with Lyotropic Liquid Crystals Structures for Molecular-size Selective Aqueous Nanofiltration," talk presented at the North American Membrane Society Annual Meeting, Chicago, IL, May 17, 2006.
- (61) Bara, J. E.; Camper, D.; Zeng, X.; Kaminski, A.; Gin, D. L.; Noble, R. D. "Design and Characterization of Novel Materials from Imidazolium-Based Room Temperature Ionic Liquids," talk presented at the North American Membrane Society Annual Meeting, Chicago, IL, May 17, 2006.
- (62) Pecinovsky, C. S.; Karp, E. M.; Schwartz, D. K.; Gin, D. L. "Photochromic Amphiphilic Metallochromes for Light-responsive Langmuir Monolayers," poster presented at the 80th ACS Colloid and Surface Science Symposium, Boulder, CO, June 19, 2006.
- (63) Pecinovsky, C. S.; Gin, D. L. "Liquid-crystalline Azobenzene Macrocycles as an Avenue to Photo-modulated Nanoporous Materials," talk presented at the 61st Northwest Regional Meeting of the American Chemical Society, Reno, NV, June 26, 2006.
- (64) Kerr, R. L.; Zeng, X.; Elliott, B. J.; Gin, D. L. "Polymerizable Li-containing Lyotropic Liquid Crystals that Exhibit Cubic Phases for the Construction of New Nanostructured Ion Conductive Materials," poster presented at the 61st Northwest Regional Meeting of the American Chemical Society, Reno, NV, June 26, 2006.
- (65) Bara, J. E.; Zeng, X.; Lessmann, S.; Noble, R. D.; Gin, D. L. "Interfacing Novel Ionic Lyotropic Liquid Crystals with Room Temperature Ionic Liquids," poster presented at the 2006 International Liquid Crystal Conference, Keystone, CO, July 4, 2006.
- (66) Pecinovsky, C. S.; Karp, E. M.; Schwartz, D. K.; Gin, D. L. "Photochromic Macrocyclic Metallomesogens for Nanoporous Materials with Photo-tunable Porosity," poster presented at the 21st International Liquid Crystal Conference, Keystone, CO, July 6, 2006.
- (67) Pecinovsky, C. S.; Bara, J. E.; Zeng, X.; Seo, W.; Gin, D. L. "Design of Polymerizable Liquid Crystals with New Functional Capabilities for Nanostructured Polymer Synthesis," poster presented at the Robert H. Grubbs Nobel Prize Symposium at Caltech, Pasadena, CA, July 22, 2006.
- (68) Noble, R. D.; Gin, D. L.; Camper, D.; Bara, J.; Zeng, X.; Koval, C. "Design and

- Characterization of Novel Membrane Materials from Imidazolium-based Room Temperature Ionic Liquids and Liquid Crystal Structures,” talk presented at the 232nd American Chemical Society National Meeting, San Francisco, CA, Sept. 12, 2006.
- (69) Klinkel, K. L.; Seo, W.; Gin, D. L. “Development of Polymerizable Lyotropic Liquid Crystal (LLC) Compounds with Fluorescent Chemical Sensing Capabilities,” poster presented at the 233rd American Chemical Society National Meeting, Chicago, IL, March 26 and 27, 2007.
- (70) Bara, J. E.; Zeng, X.; Gabriel, C. J.; Lessmann, S.; Noble, R. D.; Gin, D. L. “Design and Synthesis of Imidazolium-based Photopolymerizable Gemini Surfactants Forming Lyotropic Liquid Crystalline Phases with Room Temperature Ionic Liquids,” talk presented at the 234th American Chemical Society National Meeting, Boston, MA, August 19, 2007.
- (71) Lu, X.; Nguyen, V.; Zhou, M.; Zeng, X.; Elliott, B. J.; Gin, D. L. “Lyotropic Liquid Crystal–Butyl Rubber Nanocomposites with a Bicontinuous Cubic Morphology: A Highly Selective, Breathable Barrier Material for Chemical Agent Protection,” poster presented at the 234th American Chemical Society National Meeting, Boston, MA, August 20, 2007.
- (72) Noble, R. D.; Gin, D. L.; Koval, C. “Ionic Liquid Materials for Barrier Applications,” talk presented at the 234th American Chemical Society National Meeting, Boston, MA, August 22, 2007.
- (73) Noble, R. D.; Gin, D. L.; Bara, J. E.; Carlisle, T. K.; Voss, B. A.; Finotello, A. “Gas Separation Using Ionic Liquid Polymers,” talk presented at the 2008 International Congress on Membranes and Membrane Processes, Honolulu, HI, July 14, 2008.
- (74) Bara, J.; Camper, D.; Gabriel, C.; Carlisle, T.; Finotello, A.; Gin, D. L.; Noble, R. “gas Separations and CO₂ Capture in Room Temperature Ionic Liquids, poster presented at the 2008 International Congress on Membranes and Membrane Processes, Honolulu, HI, July 14, 2008.
- (75) Finotello, A.; Bara, J.; Narayan, S.; Gin, D.; Noble, R. “Comparison of Separation Capabilities of Room-Temperature Ionic Liquids: Bulk Fluids and Polymerized Membranes,” poster presented at the 2008 International Congress on Membranes and Membrane Processes, Honolulu, HI, July 14, 2008.
- (76) Gabriel, C.; Hatakeyama, E.; Ju, H.; Lohr, J.; Freeman, B. Noble, R.; Gin, D. “A New Application for Quaternary Ammonium and Phosphonium Polymers: Protein-resistant Membrane Coatings,” poster presented at the 2008 International Congress on Membranes and Membrane Processes, Honolulu, HI, July 15, 2008.
- (77) Voss, B.; Bara, J.; Gin, D.; Noble, R. “Light Gas Separation with Supported, Gelled Ionic Liquid Membranes,” poster presented at the 2008 International Congress on Membranes and Membrane Processes, Honolulu, HI, July 15, 2008.
- (78) Carlisle, T.; Bara, J.; Gabriel, C.; Noble, R. Gin, D. “Main-chain Ionic Polymers: A

- New Ionic Liquid-inspired Polymer Platform for Gas Separation Membranes,” poster presented at the 2008 International Congress on Membranes and Membrane Processes, Honolulu, HI, July 15, 2008.
- (79) Bara, J.; Gabriel, C.; Hatakeyama, E.; Carlisle, T.; Gin, D.; Noble, R. “Polymerizable Room Temperature Ionic Liquids as Gas Separation Membranes,” poster presented at the 2008 International Congress on Membranes and Membrane Processes, Honolulu, HI, July 15, 2008.
- (80) Hatakeyama, E.; Gabriel, C.; Zhou, M; Lohr, J.; Lu, X.; Noble, R.; Gin, D. “Surfactant Liquid Crystal-based Polymer Membranes for Aqueous, Molecular-size Exclusion Separations,” poster presented at the 2008 International Congress on Membranes and Membrane Processes, Honolulu, HI, July 15, 2008.
- (81) Bara, J. E.; Gabriel, C. J.; Carlisle, T. K.; Gin, D. L.; Noble, R. D. "Polymerized Room-Temperature Ionic Liquids and Composite Materials as Gas Separation Membranes" invited talk presented at the Gordon Research Conference on Membranes, New London, NH, August 14, 2008.
- (82) Voss, B. A.; Bara, J. E.; Gin, D. L.; Noble, R. D. "Light Gas Separation with Gelled Room-Temperature Ionic Liquid Supported Membranes," poster presented at the 236th American Chemical Society National Meeting, Philadelphia, PA. August 19, 2008.
- (83) Carlisle, T. K.; Bara, J. E.; Gabriel, C. J.; Noble, R. D.; Gin, D. L. “Main-chain Ionic Polymers: The Next Generation of Ionic Liquid-inspired Polymer Platforms,” talk presented at the 236th American Chemical Society National Meeting, Philadelphia, PA, August 21, 2008.
- (84) Carlisle, T. K.; Bara, J. E.; Noble, R. D.; Gin, D. L. "Investigation of Barrier Materials, Gas Separation Membranes, and Sorbent Particles Based on Novel, Main-chain Ionic Polymers," poster presented at the 2008 Chemical and Biological Defense Physical Science and Technology Conference, New Orleans, LA. November 18, 2008.
- (85) Voss, B. A.; Bara, J. E.; Gin, D. L.; Noble, R. D. “Light Gas Separation with Supported, Gelled Ionic Liquid Membranes,” poster presented at the 2008 Chemical and Biological Defense Physical Science and Technology Conference, New Orleans, LA. November 18, 2008.
- (86) Gin, D. L.; Elliott, B. J.; Lu, X.; Nguyen, V.; Zeng, X.; Wiesenauer, B. R.; Bara, J. E. "Highly Selective “Breathable” Vapor Barrier Materials for Chemical Agent Protection Based on Lyotropic Liquid Crystal–Butyl Rubber Nanocomposites," poster presented at the 2008 Chemical and Biological Defense Physical Science and Technology Conference, New Orleans, LA. November 18, 2008.
- (87) Bara, J. E.; Camper, D.; Gabriel, C. J.; Gin, D. L.; Noble, R. D. “CO₂ Capture in Room-temperature Ionic Liquid–Amine Solutions,” poster presented at the 237th American Chemical Society National Meeting, Salt Lake City, UT, March 24, 2009.

- (88) Gabriel, C. J.; Gin, D. L. “Imidazolium-based Dendrimers,” poster presented at the 237th American Chemical Society National Meeting, Salt Lake City, UT, March 24, 2009.
- (89) Kerr, R. L.; Miller, S. A.; Elliott, B. J.; Gin, D. L. “New Polymerizable Surfactant Liquid Crystal That Forms a Bicontinuous Cubic Phase in Water and Nonaqueous Solvents for Ion-conductive Materials Applications,” poster presented at the 237th American Chemical Society National Meeting, Salt Lake City, UT, March 24, 2009.
- (90) LaFrate, A. L.; Gin, D. L.; Noble, R. D. “Novel Nanocomposite Structures as Active and Passive Barrier Materials Project # ARO AB07CBT010,” DTRA/JSTO CBD PHM S&T Review for Protective Clothing/Fabrics, Arlington, VA, April 6, 2009.
- (91) Bara, J.; Camper, D.; Gabriel, C.; Gin, D.; Noble, R. “Energy Efficient CO₂ Capture with RTIL-Amine Solutions for Clean Energy Production,” poster presented at the 3rd International Congress on Ionic Liquids, Cairns, QLD, Australia, June 1, 2009.
- (92) Bara, J.; Carlisle, T.; Gabriel, C.; Gin, D.; Noble, R. “CO₂ Separations with Poly(RTIL)-RTIL Composite Membranes,” poster presented at the 3rd International Congress on Ionic Liquids, Cairns, QLD, Australia, June 2, 2009.
- (93) Finotello, A.; Bara, J.; Narayan, S.; Gin, D.; Noble, R. “Enhanced CO₂ Solubility in Aromatic and Alkyl Chain Substituted Imidazolium-based Room Temperature Ionic Liquids,” poster presented at the 3rd International Congress on Ionic Liquids, Cairns, QLD, Australia, June 2, 2009.
- (94) Gin, D.; Bara, J.; Carlisle, T.; Gabriel, C.; Noble, R.; Reynolds, M.; Wiesenauer, B. “New Lyotropic Liquid Crystals and Nanostructured Polymers Based on Imidazolium Ionic Liquid Platforms,” poster presented at the 3rd International Congress on Ionic Liquids, Cairns, QLD, Australia, June 2, 2009.
- (95) Noble, R. D.; Gin, D. L.; Bara, J.; Camper, D.; Carlisle, T.; Finotello, A.; Voss, B.; Gabriel, C. “CO₂ Separations in Ionic Liquids and Polymers,” invited talk presented at the 3rd International Congress on Ionic Liquids, Cairns, QLD, Australia, June 4, 2009.
- (96) Hudiono, Y. C.; Carlisle, T. K.; Bara, J. E.; Zhang, Y.; Gin, D. L.; Noble, R. D. “Novel Mixed Matrix Membrane Based on Ionic Liquid Improves CO₂ Separation,” poster presented at the North American Membrane Society Meeting, Charleston, SC, June 23, 2009.
- (97) Hudiono, Y. C.; Carlisle, T. K.; Bara, J. E.; Zhang, Y.; Gin, D. L.; Noble, R. D. “Novel Mixed Matrix Membrane Based on Ionic Liquid Improves CO₂ Separation,” poster presented at the 17th Symposium on Thermophysical Properties, Boulder, CO, June 23, 2009.
- (98) Voss, B. A.; Gin, D. L.; Noble, R. D. “Advances in Room-temperature Ion Liquid and Low Molecular-weight Organic Gelator Composites,” poster presented at the "Chemistry of Supramolecules and Assemblies" Gordon Research Conference, Waterville, ME, July 1, 2009.

- (99) Hatakeyama, E. S.; Zhou, M.; Wiesenauer, B. R.; Gabriel, C. J.; Noble, R. D.; Gin, D. L.; “Novel Polymer Materials for Improving Water Filtration Membranes”, talk presented at the 2009 NWRI-AMTA Annual Conference & Exposition, Austin, TX, July 13–16, 2009.
- (100) Hatakeyama, E. S.; Zhou, M.; Wiesenauer, B. R.; Gabriel, C. J.; Bara, J. E.; Noble, R. D.; Gin, D. L. “Novel Nanoporous Polymer Membranes for Water Purification”, poster presented at the 238th American Chemical Society National Meeting, Washington, DC, August 16–20, 2009.
- (101) Hatakeyama, E. S.; Gabriel, C. J.; Zhou, M; Wiesenauer, B. R.; Noble, R. D.; Gin, D. L. “New Polymer Membranes with Uniform, Sub-1-nanometer Pores for Molecular-Size-Selective Removal of Water from Bioprocess Product Mixtures”, poster presented at the C2B2 Semi-Annual meeting, Fort Collins, CO, September 21, 2009.
- (102) Hudiono, Y. C.; Carlisle, T. K.; Bara, J. E.; LaFrate, A. L.; Gin, D. L.; Noble, R. D. “CO₂ Separations Using Room-Temperature Ionic Liquid–Inorganic Nanoparticle Based Membranes,” 2009 American Institute of Chemical Engineering Conference, Nashville, TN, November 8–13, 2009.
- (103) Hudiono, Y. C.; LaFrate, A. L.; Gin, D. L.; Noble, R. D. “Newly Developed Composite Membranes Based on Room-Temperature Ionic Liquids For Barrier Films,” 2009 Chemical and Biological Defense Science and Technology Conference, Dallas, TX, November 16–20, 2009.
- (104) Hatakeyama, E. S.; Gabriel, C. J.; Zhou, M; Wiesenauer, B. R.; Noble, R. D.; Gin, D. L. “New Polymer Membranes with Uniform, Sub-1-nanometer Pores for Molecular-Size-Selective Removal of Water from Bioprocess Product Mixtures”, poster presented at the C2B2 Semi-Annual meeting, Golden, CO, February 4, 2010.
- (105) LaFrate, A. L.; Carlisle, T. K.; Noble, R. D.; Gin, D. L. "Vinyl-substituted Polymerizable Room-temperature Ionic Liquids: Synthesis, Polymerization, and Properties," poster presented at the 239th American Chemical Society National Meeting, San Francisco, CA, March 23, 2010.
- (106) Voss, B. A.; Gin, D. L.; Noble, R. D. “CO₂ and N₂ Transport in Gelled Room-temperature Ionic Liquid Membranes,” poster presented at the 239th American Chemical Society National Meeting, San Francisco, CA, March 23, 2010.
- (107) Hatakeyama, E. S.; Wiesenauer, B. R.; Gabriel, C. J.; Zhou, M.; Noble, R. D.; Gin, D. L. “Polymer Membranes with Mono-disperse Nanopores for Water Filtration and Desalination Applications,” poster presented at the 239th American Chemical Society National Meeting, San Francisco, CA, March 23, 2010.
- (108) Carlisle, T. K.; LaFrate, A. L.; Noble, R. D.; Gin, D. L. "CO₂-selective Polymeric Gas Separation Membranes Fabricated from Substituted Vinylimidazolium Room-temperature Ionic Liquid Monomers," poster presented at the 239th American Chemical Society National Meeting, San Francisco, CA, March 23, 2010.

- (109) Noble, R. D.; Gin, D. L.; Falconer, J. L.; Sorenson, S. G.; Smyth, J. R.; Hudiono, Y. C. "Correlations in Zeolite and Ionic Liquid Membrane Performance," invited talk presented at the 239th American Chemical Society National Meeting, San Francisco, CA, March 23, 2010.
- (110) Kerr, R. L.; Miller, S. A., Shoemaker, R. K.; Elliott, B. J.; Gin, D. L. "Cross-linkable, Li-ion Lyotropic Liquid Crystal that Forms a Highly Ion-conductive Bicontinuous Cubic Phase Polymer Electrolyte with Non-aqueous Solvents," poster presented at the 239th American Chemical Society National Meeting, San Francisco, CA, March 24, 2010.
- (111) Hudiono, Y. C.; LaFrate, A. L.; Gin, D. L.; Noble, R. D. "Poly(RTIL)-Zeolite Composite Membranes for Selective Vapor Barrier Materials," talk presented at the 2010 North American Membrane Society Meeting, Washington, DC, July 19, 2010.
- (112) Wiesenaue, B. R.; Bara, J. E.; Noble, R. D.; Gin, D. L. "Design and Synthesis of a Lewis Acid Functionalized Room-temperature Ionic Liquid for Use as a Gas Capture Material," poster presented at the 240th American Chemical Society National Meeting, Boston, MA, August 22, 2010.
- (113) Wiesenaue, B. R.; Hatakeyama, E. S.; Zhou, M.; Noble, R. D.; Elliott, B. J.; Gin, D. L. "Synthesis and Fabrication of Nanoporous Thin-films Based on the Polymerization of a Gemini Ammonium Amphiphile for Molecular-size Filtration Applications," poster presented at the 240th American Chemical Society National Meeting, Boston, MA, August 24, 2010.
- (114) Noble, R. D.; Gin, D. L. "New Membrane Materials Based on Room-temperature Ionic Liquids," invited talk presented in the "New Materials and Concepts for Next Generation Membranes" at the Pacifichem 2010 conference, Honolulu, HI, December 16, 2010.
- (115) Gin, D. L.; Carter, B. M.; Hatakeyama, E. S.; Wiesenaue, B. R.; Noble, R. D. "Lyotropic Liquid Crystal Polymer Membranes with Uniform, Sub-1-nm Pores for Molecular Sized-based Water Separations: New Designs, Pore Size Control, and Process," talk presented at the 2011 International Congress on Membranes and Membrane Processes, Amsterdam, The Netherlands, July 25, 2011.
- (116) Carter, B. M.; Wiesenaue, B. R.; Hatakeyama, E. S.; Noble, R. D.; Gin, D. L. "Nanopore Size Control and Processing Advancements in Lyotropic Liquid Crystal Polymer-based Water Nanofiltration Membranes," poster presented at the 2011 International Congress on Membranes and Membrane Processes, Amsterdam, The Netherlands, July 26, 2011.
- (117) Noble, R. D.; LaFrate, A. L.; Carlisle, T. K.; Gibson, P.; Schreuder-Gibson, H. L.; Gin, D. L. "Highly Breathable, Dense Barrier Membranes Based on Polymerized Room-temperature Ionic Liquid Composites that Block Mustard Agent Simulant Vapor," talk presented at the 2011 International Congress on Membranes and Membrane Processes, Amsterdam, The Netherlands, July 28, 2011.

- (118) Noble, R. D.; Gin, D. L. “Separations Using Ionic Liquids and Membranes,” invited plenary lecture at the 1st International Conference on Ionic Liquids in Separation and Purification Technology, Sitges, Spain, September 6, 2011.
- (119) Wiesenaue, B. R.; Carter, B. M.; Hatakeyama, E. S.; Bara, J. E., Elliott, B. J.; Gin, D. L., Noble, R. D. “Polymerization of Ionic Liquid (IL)-based Gemini Imidazolium Amphiphiles for the Fabrication of Membranes with Uniform, Nanometer-size Pores for Molecular Sieving Applications,” poster presented at the 1st International Conference on Ionic Liquids in Separation and Purification Technology, Sitges, Spain, September 5, 2011.
- (120) Fortin, E. E.; Edwards, J. P.; Scalfani, V. F.; Carlisle, T. K.; Noble, R. D.; Bailey, T. S.; Gin, D. L. “Ordered, Phase-separated Imidazolium Poly(IL)-based Block Copolymers for CO₂/Light Gas Membrane Separations,” poster presented at the 1st International Conference on Ionic Liquids in Separation and Purification Technology, Sitges, Spain, September 5, 2011.
- (121) Miller II, A. L.; Carlisle, T. K.; Noble, R. D.; Gin, D. L. “Design of Reactive RTIL-based Composite Membrane Materials for the Decontamination of Chemical Warfare Agent Simulants,” poster presented at the 1st International Conference on Ionic Liquids in Separation and Purification Technology, Sitges, Spain, September 5, 2011.
- (122) Voss, B. A.; Gin, D. L.; Noble, R. D. “Strippable, Spreadable Ionic Liquid Gel-based Containment and Decontamination Coatings for Chemical Warfare Agents,” poster presented at the 2011 Chemical and Biological Defense Science and Technology Conference, Las Vegas, NV, November 15, 2011.
- (123) Miller II, A. L.; Gin, D. L.; Noble, R. D. “Design of Reactive Room-temperature Ionic Liquid Composite Membranes Materials for the Decontamination of Chemical Warfare Agent Simulants,” talk presented at the 2011 Chemical and Biological Defense Science and Technology Conference, Las Vegas, NV, November 16, 2011.
- (124) Wiesenaue, E.; Scalfani, V.; Nguyen, P. T.; Bailey, T.; Noble, R.; Gin, D. “Design, Synthesis, and Fabrication of Ordered, Phase-separated, Ionic Liquid-based Alkyl-ionic Diblock Copolymer Membranes and the Effect of Nanostructure on CO₂/light Gas Separations,” talk presented at the International Conference of Young Researchers on Advanced Materials (ICYRAM) Conference, Singapore, July 1–6, 2012.
- (125) Wiesenaue, B.; Carter, B.; Hatakeyama, E.; Noble, R.; Gin, D. “Thin-film Fabrication and Nanopore Size Tuning of Q₁-phase Lyotropic Liquid Crystal Polymer Membranes and Their Application as Water Nanofiltration Membranes,” talk presented at the International Conference of Young Researchers on Advanced Materials (ICYRAM) Conference, Singapore, July 1–6, 2012.
- (126) Nguyen P. T.; Wiesenaue E. F.; Gin D. L.; Noble R. D. "Effect of Composition and Nanostructure on CO₂/Light Gas Transport Properties of Supported Alkyl-imidazolium Block Copolymer Membranes," poster presented at the Membranes: Materials and Processes Gordon Research Conference, New London, NH, July 28, 2012.

- (127) Nguyen P. T.; Herrera-Alonso J.; Gin D. L.; Hill M. R.; Noble R. D. "Mixed-matrix Membranes Based on Metal-organic Framework and Ionic Liquid Materials for CO₂/Light Gas Separations," poster presented at the Membranes: Materials and Processes Gordon Research Conference, New London, NH, July 28, 2012.
- (128) Carter, B. M.; Wiesenauer, B. R.; Hatakeyama, E. S.; Barton, J. L.; Noble, R. D.; Gin, D. L. "Thin-film Composite Lyotropic Liquid Crystal Membranes with Monodisperse Nanopores for Water Filtration and Desalination," poster presented at the Membranes: Materials and Processes Gordon Research Conference, New London, NH, July 30, 2012.
- (129) McDanel, W. M.; Carlisle, T. K.; Swanson, A. K.; Gin, D. L.; Noble, R. D. "CO₂/Light Gas Separations with Ion Gel Composite Membranes from Novel Epoxide Functionalized Room Temperature Ionic Liquids," poster presented at the Membranes: Materials and Processes Gordon Research Conference, New London, NH, August 1–2, 2012.
- (130) Urban, N. D.; Wiesenauer, B. R.; Noble, R. D.; Gin, D. L. "Functionalized Imidazolium-based Surfactants Capable of a pH Dependent Response," poster presented at the 244th National Meeting of the American Chemical Society, Philadelphia, PA, August 20, 2012.
- (131) Schenkel, M. R.; Carter, B. M.; Shao, R.; Clark, N. A.; Gin, D. L. "New Thermotropic Ionic Liquid Crystals Based on Ionic Liquid Building Blocks," poster presented at the 24th International Liquid Crystal Conference, Mainz, Germany, August 20, 2012.
- (132) Noble, R. D.; Carter, B. M.; Wiesenauer, B. R.; Gin, D. L. "Nanostructured Polymer Membranes with Sub-1-nm Pores for Molecular Size Separations via the Cross-linking of Lyotropic Liquid Crystal Assemblies," invited talk by R. D. Noble for symposium entitled "Industrial and Engineering Chemistry Fellow: Symposium in Honor of Douglas Gin" at the 245th American Chemical Society National Meeting, New Orleans, LA, April 9, 2013.
- (133) Wiesenauer, E.; Nguyen, P. T.; Newell, B.; Bailey, T.; Noble, R.; Gin, D. "Imidazolium IL-Based Di- and Tri-Block Copolymers and the Effect of Nanostructure on CO₂/Light Gas Membrane Separations," poster presented at the 5th International Conference on Ionic Liquids, Algarve, Portugal, April 22, 2013.
- (134) Noble, R. D.; Gin, D. L. "Ionic Liquids as a Chemical Platform for Membrane Design and Applications," invited talk at the 5th International Conference on Ionic Liquids, Algarve, Portugal, April 22, 2013.
- (135) McDanel, W.; Carlisle, T.; Swanson, A.; Gin, D. L.; Noble, R. D. "Synthesis of Step-growth Cross-linked Epoxy Resins from Bisepoxide-functionalized Imidazolium Ionic Liquids," poster presented at the 5th International Congress on Ionic Liquids, Algarve, Portugal, April 23, 2013.

- (136) Cowan, M. G.; Nguyen, D.; Gin, D. L.; Noble, R. D. "Composite Membranes Based on PVDF-co-HFP/RTIL Systems," poster presented at the North American Membrane Society Meeting, Boise, ID, June 10, 2013.
- (137) Noble, R. D.; Nguyen, P. T.; Hill, M. R.; Konstas, K.; Doherty, C. M.; Lau, C.H.; Bourgeois, L.; Bastow, T. J.; Hill, A. J.; Gin, D. L. "Forever Young: Ending Aging in Super-Glassy Polymer Membranes," talk presented at the North American Membrane Society Meeting, Boise, ID, June 12, 2013.
- (138) Tousley, M.; Feng, X.; Wiesenauer, B.; Cowan, M.; Mahajan, L.; Kasi, R.; Gin, D.; Elimelech, M.; Osuji, C. O. "Lyotropic Liquid Crystalline Templates for the Fabrication of Aligned Carbon Nanotube Membranes," poster presented at the 24th North American Membrane Society Annual Meeting, Houston, TX, May 31–June 4, 2014.
- (139) Cowan, M. G.; Kohno, Y.; McDanel, W. M.; Gin, D. L.; Noble, R. D. "Polymerizable Silver(I)/Imidazolium Ionic Liquids," poster presented at the "Ionic Liquids: Solvents, Materials, or Medicines?" Gordon Research Conference, Newry, ME, August 17–22, 2014.
- (140) Kohno, Y.; Cowan, M. G.; Masuda, M.; Gin, D. L.; Noble, R. D. "Design of Metal-containing Ionic Liquids for Gas Separation Applications," poster presented at the "Ionic Liquids: Solvents, Materials, or Medicines?" Gordon Research Conference, Newry, ME, August 17–22, 2014.
- (141) Singh, Z. V.; Noble, R. D.; Gin, D. L. "Systematic Design and Application of RTIL-based Mixed Matrix Membranes with High CO₂/CH₄ Selectivity," talk presented Total Technical Meeting, Santa Clara, CA, February, 2015
- (142) Dischinger, S. M.; Carter, B. M.; Gin, D. L.; Noble, R. D. "Controlling Transport Through a Cubic-Phase Lyotropic Liquid-Crystalline Polymer Nanofiltration Membrane via Anion Exchange," poster presented at the 249th American Chemical Society National Meeting, Denver, CA, March 23 and 24, 2015.
- (143) Singh, Z. V.; Gin, D. L.; Noble, R. D. "Design of High Permeability and High Selectivity Room Temperature Ionic Liquid Based Mixed Matrix Membranes for CO₂/CH₄ Separations," talk presented at the 25th North American Membrane Society Annual Meeting, Boston, MA, June 3, 2015.
- (144) Noble, R. D.; McDanel, W.; Cowan, M.; Singh, Z.; Gin, D. L. "Ionic liquid Composite Membranes for CO₂/Light Gas Separations," invited talk presented at the 6th International Congress on Ionic Liquids, Deju, South Korea, June 17, 2015.
- (145) Martin, R. M.; Voss, B. A.; Noble, R. D.; Gin, D. L. "New Ionic Liquid Gel-Based Curable Coatings Based on Alcohol-Isocyanate Step-Growth Chemistry," poster presented at the 6th International Congress on Ionic Liquids, Deju, South Korea, June 17, 2015.
- (146) Robertson, L. A.; Gin, D. L. "Imidazolium Ionic-Liquid-Based Polymerizable Liquid Crystals: Dependence of Liquid Crystal Behaviour on Tail Structure and Anion,"

- poster presented at the 6th International Congress on Ionic Liquids, Deju, South Korea, June 18, 2015.
- (147) Singh, Z. V.; Noble, R. D.; Gin, D. L. “Ionic Liquids in Mixed Matrix Membranes for Highly Selective CO₂/CH₄ Separations,” talk presented at the Nineteenth Symposium on Thermophysical Properties, Boulder, CO, June 22, 2015.
- (148) Mori, D. I.; Martin, R. M.; Gin, D. L.; Elliott, B. J. “Development of an Ammonium-based Step-Growth Poly(RTIL)/RTIL Coating System for Containment and Adsorption,” poster presented at the 250th American Chemical Society National Meeting, Boston, MA, August 18, 2015.
- (149) Lanč, M.; Pilnáček, K.; Fíla, V.; Vopička, O.; Izák, P.; Sedláková, Z.; Noble, R. D.; McDanel, W.; Gin, D. L.; Friess, K. “Biogas Separation via Supported Ionic Liquid Membranes (SILM) with High Content of 1-Ethyl-3-methylimidazolium-bis(trifluoromethanesulfonyl)imide,” talk presented at the Euromembrane 2015 conference, Aachen, Germany, September 7, 2015.
- (150) Cowan, M. G.; Zhou, J.; Mok, M. M.; McDanel, W. M.; Carlisle, T. K.; Gin, D. L.; Noble, R. D. “6000 GPU poly(ionic liquid)/ionic liquid composite membrane for CO₂/N₂ separations,” talk presented at the Pacificchem 2015 conference, Honolulu, HI, December 17, 2015.
- (151) Cowan, M. G.; McDanel, W. M.; Funke, H. H.; Kohno, Y.; Gin, D. L.; Noble, R. D. “New strategy for designing silver(I) coordination complexes for olefin/paraffin separations,” talk presented in the “MTLS: Current and Future Applications of Nanotechnology in the Oil Industry (#197)” session at the Pacificchem 2015 conference, Honolulu, HI, December 17, 2015.
- (152) Cowan, M. G.; McDanel, W. M.; Funke, H. H.; Kohno, Y.; Gin, D. L.; Noble, R. D. “New strategy for designing silver(I) coordination complexes for olefin/paraffin separations,” talk presented in the “INOR: Functional Nanomaterials Based on Coordination Chemistry (#73)” session of the Pacificchem 2015 conference, Honolulu, HI, December 17, 2015.
- (153) Noble, R. D.; Gin, D. L.; McDanel, W.; Cowan, M.; Singh, Z. “Ionic Liquid Composite Membranes for CO₂/Light Gas Separations,” invited talk presented at the Pacificchem 2015 conference, Honolulu, HI, December 17, 2015.
- (154) Singh, Z. V.; Gin, D. L.; Noble, R. D. “RTIL-based Mixed Matrix Membranes for Gas Separations,” talk presented at the Total Technical Meeting, Boston, MA, March 17–21, 2016.
- (155) Cowan, M. G.; Gin, D. L.; Noble, R. D. “Transition Metal Complexes as Highly Selective Solid-State Sorbents,” talk presented at the Total Company Technical Meeting, Boston, MA, March 17–21, 2016.
- (156) Dischinger, S. M.; Noble, R. D.; Gin, D. L. “Manipulating Nanopore Selectivity in Lyotropic Liquid Crystal Polymer Nanofiltration Membranes for the Recovery of Targeted Organic Solutes,” talk presented in the Design and Processing of Polymeric

and Organic Membranes I session at the 2016 North American Membrane Society Meeting, Bellevue, WA, May 23, 2016.

- (157) Cowan, M. G.; McDanel, W. M.; Singh, Z. V.; Carlisle, T. K.; Kohno, Y.; Gin, D. L.; Noble, R. D. “Poly(ionic liquid)/Ionic Liquid Ion-Gel Membranes for CO₂/Light-Gas Separations,” invited talk presented in the NAMS Award Session at the 2016 North American Membrane Society Meeting, Bellevue, WA, May 24, 2016.
- (158) Gin, D. L.; Dischinger, S. M.; Noble, R. D. “Pore Size Modification of Nanoporous, Ionic Lyotropic Liquid Crystal Polymer Membranes via Postpolymerization Counterion Exchange,” contributed talk presented at the 252nd American Chemical Society National Meeting, Philadelphia, PA, August 24, 2016.
- (159) Singh, Z. V.; Tan, L.; Cowan, M. G.; Zhang, W.; Gin, D. L.; Noble, R. D. “Novel Supramolecular Organic Framework (SOF) Based Mixed Matrix Membranes (MMMs) for CO₂/CH₄, CO₂/N₂, and N₂/CH₄ Separations,” talk presented at the 2016 American Institute of Chemical Engineers Annual Meeting, San Francisco, CA, November 14, 2016.
- (160) Noble, R. D.; Gin, D. L.; McDanel, W. M.; Cowan, M. G.; Singh, Z. V. “Ionic Liquid Composite Membranes for CO₂/Light Gas Separations,” invited talk presented at the Spring 2017 Materials Research Society Meeting, Phoenix, AZ, April, 20, 2017.
- (161) Dwulet, G. E.; Dischinger, S. M.; Gin, D. L.; Noble, R. D. “Nanopore Tuning in Lyotropic Liquid Crystal Membrane Materials for Optimized Water Vapor Transport and Selective Rejection of CWA Simulants,” talk and poster presented at the Spring 2017 Membrane Applied Science and Technology Center Industrial Advisory Board Meeting, Fayetteville, AR, April 23–25, 2017.
- (162) Dunn, C. A.; Singh, Z. V.; Gin, D. L.; Noble, R. D. “Mixed-matrix Membrane Systems for Carbon Dioxide / Methane Separations,” talk presented at the Total Company Technical Meeting, Boston, MA, April 24, 2017.
- (163) Dwulet, G. E.; Noble, R. D.; Gin, D. L.; “Design and Synthesis of a New Reactive Liquid Crystal Monomer and Nanoporous Polymer Resin for Oxidation Catalysis,” poster presented at the Liquid Crystals Gordon Research Conference, Biddeford, ME, June 18–23, 2017.
- (164) Singh, Z. V.; Tan, L.-L.; Cowan, M. G.; Yang, Y.-W.; Zhang, W.; Gin, D. L.; Noble, R. D. “Novel supramolecular organic framework (SOF) based mixed matrix membranes (MMMs) for methane purification,” talk presented at the 2017 International Congress on Membranes and Membrane Processes, San Francisco, CA, August 2, 2017.
- (165) Dischinger, S. M.; Noble, R. D.; Gin, D. L.; Linden, K. G.; Rosenblum, J. “Nanoporous lyotropic liquid crystal polymer membranes for the treatment of hydraulic fracturing flowback water,” talk presented at the 2017 International Congress on Membranes and Membrane Processes, San Francisco, CA, August 2, 2017.

- (166) Noble, R. D.; Gin, D. L.; Dischinger, S. M.; Dwulet, G. E. “Nanopore tuning in lyotropic liquid crystal membrane materials for optimized water vapor transport and selective rejection of CWA simulants,” talk presented at the 2017 International Congress on Membranes and Membrane Processes, San Francisco, CA, August 3, 2017.
- (167) Dwulet, G. E.; Dischinger, S. M.; Gin, D. L.; Noble, R. D. “Nanopore Tuning in Lyotropic Liquid Crystal Membrane Materials for Optimized Water Vapor Transport and Selective Rejection of CWA Simulants,” talk and poster presented at the Fall 2017 Membrane Applied Science and Technology Center Industrial Advisory Board Meeting, Newark, NJ, October 22–24, 2017.
- (168) Dwulet, G. E.; Dischinger, S. M.; Gin, D. L.; Noble, R. D. “Nanoporous Lyotropic Liquid Crystal-based Thin-Film Composite Membranes as Breathable Barrier Materials for Protection Against Chemical Warfare Agents,” poster presented at the 2017 Chemical and Biological Defense Science & Technology Conference, Long Beach, CA, November 29, 2017.
- (169) Mori, D. I.; Gin, D. L. “Design and Development of New Curable Ammonium-Based Ionic Liquid Materials for Organic Hazard Mitigation,” poster presented at the 2017 Chemical and Biological Defense Science & Technology Conference, Long Beach, CA, November 29, 2017.
- (170) Dwulet, G. E.; Dischinger, S. M.; Gin, D. L.; Noble, R. D. “Nanopore Tuning in Lyotropic Liquid Crystal Membrane Materials for Optimized Water Vapor Transport and Selective Rejection of CWA Simulants,” talk presented at the Spring 2018 Membrane Applied Science and Technology Center Industrial Advisory Board Meeting, State College, PA, April 23, 2018.
- (171) Dunn, C. A.; Singh, Z. V.; Gin, D. L.; Noble, R. D. “Mixed-matrix membrane systems for carbon dioxide/methane separations,” talk presented at the Total Company Technical Meeting, Montreal, PQ, Canada, April 25–26, 2018.
- (172) Dunn, C. A.; Singh, Z. V.; Gin, D. L.; Noble, R. D. “New Poly(ionic liquid)-Ionic Liquid-Zeolite Mixed-Matrix Membranes for CO₂/CH₄ Separations Made with Curable Poly(ionic liquid)s of Controlled Length,” poster presented at the 2018 North American Membrane Society Meeting, Lexington, KY, June 12, 2018.
- (173) McGrath, M. J.; Feng, X.; Noble, R. D.; Gin, D. L.; Osuji, C. O. “Thin Membrane with Vertically Aligned, Cylindrical Liquid Crystal 1 nm Pores Fabricated via Confinement and Film Transfer,” poster presented at the 2018 North American Membrane Society Meeting, Lexington, KY, June 12, 2018.
- (174) Dwulet, G. E.; Gin, D. L. “Nanoporous Lyotropic Liquid Crystal-Based Polymer Resin for Heterogeneous, Molecular Size-Selective Alcohol Oxidation Catalysis,” poster presented at the 27th International Liquid Crystals Conference, Kyoto, Japan. July 23, 2018.
- (175) Dwulet, G. E.; Dischinger, S. M.; Gin, D. L.; Noble, R. D. “Nanopore Tuning in Lyotropic Liquid Crystal Membrane Materials for Optimized Water Vapor Transport

- and Selective Rejection of CWA Simulants,” talk presented at the Fall 2018 Membrane Applied Science and Technology Center Industrial Advisory Board Meeting, Boulder, CO, November 5, 2018.
- (176) Dwulet, G. E.; Dischinger, S. M.; Gin, D. L.; Noble, R. D. “Nanopore Tuning in Lyotropic Liquid Crystal Membrane Materials for Optimized Water Vapor Transport and Selective Rejection of CWA Simulants,” talk presented at the Spring 2019 Membrane Applied Science and Technology Center Industrial Advisory Board Meeting, Fayetteville, AR, May 5, 2019.
- (177) McGrath, M. J.; Hardy, S.; Basalla, A.; Funke, H.; Manubay, B.; Shi, Z.; Gin, D.; Noble, R. “Polymerization of counterions in self-assembled, 1 nm pores of lyotropic liquid crystal anion exchange membrane to tune nanopore and ion transport properties,” invited talk presented at the 2019 North American Membrane Society Meeting, Pittsburgh, PA, May 13, 2019.
- (178) Dunn, C. A.; Shi, Z.; Zhou, R.; Gin, D.; Noble, R. “(Cross-linked Poly(ionic liquid)-Ionic Liquid-Zeolite) Mixed-Matrix Membranes for CO₂/CH₄ Gas Separations Based on Curable Ionic Liquid Prepolymers,” poster presented at the 2019 North American Membrane Society Meeting, Pittsburgh, PA, May 13, 2019.
- (179) McGrath, M. J.; Patterson, N.; Manubay, B.; Funke, H.; Hardy, S.; Basalla, A.; Yue, X.; Liu, P.; Gin, D.; Noble, R. “Fouling of Anion Exchange Membranes in Ferric Chloride Solutions: mechanism and the role of ion exchange capacity, water content, and pore structure,” poster presented at the 2019 North American Membrane Society Meeting, Pittsburgh, PA, May 13, 2019.
- (180) Dunn, C. A.; Gin, D. L.; Noble, R. D. “3-Component Mixed-Matrix Membranes for CO₂/CH₄ Separations Evaluated Under High Pressure, Binary-feed Conditions,” talk presented at the Total S.A. Sponsored Student Meeting, Toronto, ON, Canada, October 28, 2019.
- (181) Karunaweera, C.; Gin, D. L.; Noble, R. D. “Enhanced CO₂/CH₄ Separation Performance of Polymerized Ionic Liquid-Ionic Liquid Membranes Made with Multifunctional Ionic Cross-linkers,” talk presented at the 2021 North American Membrane Society Meeting, Estes Park, CO, August 30, 2021.
- (182) Karunaweera, C.; Gin, D.; Noble, R. “Cross-linked Poly(Ionic Liquid)-Ionic Liquid Composite Membranes for CO₂/Light Gas Separations: Mixed-Gas Separation Performance and Long-Term Stability Under High-Temperature and -Pressure Conditions,” (virtual) talk presented at the 2022 North American Membrane Society Meeting, Tempe, AZ, May 17, 2022.
- (183) Schwindt, N.; Sahu, S.; Gin, D. L.; Noble, R. D.; Shirts, M. R. “Understanding the normal bicontinuous cubic phase in gemini lyotropic liquid crystals in order to design selective separations,” poster presented at the Foundations of Molecular Modeling and Simulation (FOMMS) 2022 Conference, Lake Lawn Resort, Delavan, WI, July 20, 2022.
- (184) Bodkin, L. N.; Gin, D. L. “Improved Mechanical Compliance in Bicontinuous Cubic

- Lyotropic Membranes Based on a Cross-Linking Gemini Monomer via Copolymerization with a Non-Cross-Linkable Analog,” talk presented at 2022 Chemical and Biological Defense Science & Technology Conference, San Francisco, CA, December 7, 2022.
- (185) Bodkin, L. N.; Krajnak, Z. A.; Dong, R.; Osuji, C. O.; Gin, D. L. “Cross-Linkable, Phosphobetaine-Based, Zwitterionic Amphiphiles that Form Lyotropic Bicontinuous Cubic Phases,” poster presented at Spring 2023 American Chemical Society National Meeting, Indianapolis, IN, March 27–28, 2023.
- (186) Noble, R. D.; Gin, D.; Karunaweera, C.; Cowan, M. “Long term Stability of Thin Film Cross-linked Ionic Liquid Membranes for CO₂ Gas Separation,” talk presented at the 2023 North American Membrane Society Meeting, Tuscaloosa, AL, May 16, 2023.
- (187) Bodkin, L. N.; Li, P.; Dyer, S.; Krajnak, Z.; Malecha, J.; Noble, R. D.; Gin, D. “Improved Mechanical Compliance in Bicontinuous Cubic Lyotropic Membranes Based on a Cross-Linking Gemini Monomer via Copolymerization with a Non-Cross-Linkable Analog,” talk presented at the 2023 North American Membrane Society Meeting, Tuscaloosa, AL, May 16, 2023.
- (188) Culley, K. E.; Johnson, C.; Gin, D. L. “Sulfonic-Acid-Based Lyotropic Bicontinuous Cubic Polymer Network for Molecular-Size-Selective Heterogeneous Catalysis,” poster presented at Fall 2023 American Chemical Society National Meeting, San Francisco, CA, August 15, 2023.
- (189) Culley, K. E.; Bodkin, L. N.; Gin, D. L. “Effect of Oligo(ethylene oxide) Functionalization on the Phase Behavior of Two Bicontinuous Cubic Lyotropic Liquid Crystal Monomer Platforms,” poster presented at Fall 2023 American Chemical Society National Meeting, San Francisco, CA, August 15, 2023.

Grants and Research Funding

I. Active Research Grants

U.S. Army Research Office (Phase 2 STTR grant with TDA Research, Inc.); “5 Volt Lithium Ion Rechargeable Battery”; \$1,100,000 total costs; 04/23/23–06/16/25; 2 investigators (B. J. Elliott (PI), D. L. Gin); DLG’s share: \$330,000; role: Principal Investigator for CU subcontract grant portion.

II. Pending Research Support

III. Completed Research Grants

Committee on Research (UC Berkeley); a series of small, one-year grants totaling ~\$16,000 total costs; 1994–2001; role: Principal Investigator.

Office of Naval Research; "Morphology and Property Control in Polymer Thin Films Through the Use of Self-Assembling Monomers"; \$90,478 total costs; 1995–1996; role: Principal Investigator.

3M Company; 3M Nontenured Faculty Awards (4); \$60,000 total costs; 1996–1999; role: Principal Investigator.

Dept. of Energy / Lawrence Berkeley National Laboratory; "Center for Advanced Materials"; 5 investigators (M. M. Denn (PI), J. A. Reimer, S. Muller, A. Chakaraborty, D. L. Gin); DLG share: \$420,000 total costs; 1995–2001; role: Co-Principal Investigator).

National Science Foundation (Division of Materials Research) (CAREER Award); "Highly Ordered Polymeric Materials via a Monomer Self-Assembly Approach"; \$322,153 total costs; 1996–2001; role: Principal Investigator.

Raychem Corporation; unrestricted research gifts (3); \$45,000 total costs; 1996–1999; role: Principal Investigator.

Dept. of Energy / Lawrence Berkeley National Laboratory; Center of Excellence for the Synthesis and Processing of Advanced Materials"; 2 investigators (D. L. Gin (PI) and J. A. Reimer); DLG share: \$240,000 total costs; 1996–2000; role: Principal Investigator.

ACS Petroleum Research Fund (Type G Grant); "Piezoelectric Polymer Networks via Monomer Self-Assembly"; \$20,000 total costs; 1996–1998; role: Principal Investigator.

Exxon; Exxon Education Fund; "Research into New Strategies in Highly Ordered Materials: Polymer Synthesis in Liquid Crystalline Media", \$20,000 total costs; 1996–1998; role: Principal Investigator).

Office of Naval Research; "Functionalized Nanoporous Polymer Membranes with Well-

Defined Pore Architectures via Lyotropic Liquid-Crystalline Monomers"; \$240,000 total costs; 1997–2000; role: Principal Investigator.

Research Corporation; "Cottrell Teacher-Scholar Award"; \$50,000 total costs; 1997–1999; role: Principal Investigator.

National Research Council (COBASE Program); "Exploring the Interface between Elastomers and Rigid Networks of Chiral Liquid Crystals: Optimizing the Properties of Polymer Transducers"; \$13,000 total costs; 1999; role: Principal Investigator.

ACS Petroleum Research Fund (Type AC Grant); "Heterogeneous Catalysis Studies with the Cross-linked Inverted Hexagonal Phase: Organic Analogs to Molecular Sieves"; \$60,000 total costs; 1998–2001; role: Principal Investigator.

Alfred P. Sloan Foundation; "Sloan Research Fellowship"; \$35,000 total costs; 1999–2001; role: Principal Investigator.

Office of Naval Research; "Optimization of Nanoporous Lyotropic Liquid Crystal Networks for Membrane Applications", \$167,000 total costs; 2000–2002; role: Principal Investigator.

U.S. Army Research Office (Phase 1 STTR subcontract with TDA Research, Inc.); "Breathable Butyl Rubber for Chemical Agent Protection"; \$100,000 total costs; 10/01/01–3/31/02; 2 investigators (B. J. Elliott (PI) and D. L. Gin); DLG share: \$30,000; role: Co-Principal Investigator and university subcontractor.

Colorado Commission on Higher Education through the Center of Excellence Program (CU ChE Dept.); "Water Purification Based on Nanoengineering"; \$26,800 total costs; 6 investigators (D. L. Gin, M. Zhou, C. Gonzales, C. Morrow, R. D. Noble, C. N. Bowman); DLG share: \$26,800; role: Principal Investigator.

U.S. Dept. of Energy (Phase 1 STTR subcontract with TDA Research, Inc.); "Nanostructured Polymeric Heterogeneous Catalysts for Industrial Applications"; \$100,000 total costs; 5/01/03–1/01/04; 2 investigators (B. J. Elliott (PI) and D. L. Gin); DLG share: \$32,725; role: Co-Principal Investigator and university subcontractor.

National Science Foundation (symposium grant), "Polymer Chemistry in Nanotechnology Symposium"; \$3000 total costs; 2003–2004; role: Principal Investigator.

Office of Naval Research (symposium grant), "Polymer Chemistry in Nanotechnology"; \$3000 total costs; 2003–2004; role: Principal Investigator.

Army Research Office (symposium grant), "Speaker Travel Support for ACS Symposium: "Polymer Chemistry in Nanotechnology"; \$2000 total costs, 2003–2004; role: Principal Investigator.

U.S. Army Research Office (Phase 2 STTR subcontract with TDA Research, Inc.); "Breathable Butyl Rubber for Chemical Agent Protection"; \$500,000 total costs; 10/01/02–9/30/04; 2 investigators (B. J. Elliott (PI) and D. L. Gin); DLG share: \$200,000; role: Co-Principal Investigator and university subcontractor.

Office of Naval Research; "Lyotropic Liquid Crystal Polymer Membranes for Nanofiltration and Catalytic Treatment of Shipboard Waste Water"; \$330,000 total costs; 3/15/02–10/31/04; role: Principal Investigator.

Council on Research and Creative Work, CU Boulder (conference grant); "Frontiers in Liquid Crystals and Molecular Self-Assembly Conference"; \$2000 total costs; 6/01/04–12/31/04; role: Principal Investigator.

National Science Foundation (conference grant); "Workshop on Frontiers in Liquid Crystals and Molecular Self-Assembly"; \$3000 total costs; 6/01/04–12/31/04; 2 investigators (N. A. Clark (PI) and D. L. Gin); DLG share: \$1500; role: Co-Principal Investigator.

DARPA / U.S. Army Research Office; "Generation of Mechanical Motion Using Active Transport"; \$1,267,000 total costs; 4/15/03–4/14/05; 5 investigators (R. D. Noble (PI), C. A. Koval, D. L. Gin, P. Scovazzo, J. Davis); DLG share: \$200,000; role: Co-Principal Investigator.

Office of Naval Research; "Preparation and Characterization of Composite Liquid Crystal Membranes for Reverse Osmosis and Desalination"; \$160,000 total costs; 12/01/04–11/30/05; (Principal Investigator); 2 investigators (D. L. Gin (PI) and B. D. Freeman); DLG share: \$84,000; role: Principal Investigator.

National Science Foundation (Division of Materials Research); "Nanostructured Polymers for Brønsted and Lewis Acid Catalysis via Monomer Self-Assembly"; \$320,025 total costs; 8/01/01–12/31/05; role: Principal Investigator.

U.S. Dept. of Energy (Phase 2 STTR subcontract with TDA Research, Inc.); "Nanostructured Polymeric Heterogeneous Catalysts for Industrial Applications"; \$750,000 total costs; 8/01/04–7/31/06; 2 investigators (B. J. Elliott (P.I.) and D. L. Gin); DLG share: \$250,000; role: Co-Principal Investigator and university subcontractor.

U.S. Dept. of Energy (Phase 2 STTR subcontract with TDA Research, Inc.); "Lithium Ion-channel Polymer Electrolyte for Lithium Metal Anode Rechargeable Batteries"; \$750,000 total costs; 07/01/05–06/30/07; 2 investigators (B. J. Elliott (PI) and D. L. Gin); DLG share: \$250,000; role: Co-Principal Investigator and university subcontractor.

Office of Naval Research; "Design and Synthesis of Novel Membrane Coatings for Protein Anti-fouling: Investigating the Roles of Surface Chemistry and Nanostructure"; \$330,000 total costs; 11/01/04–10/31/07; role: Principal Investigator.

Office of Naval Research (symposium grant); "Polymers and Liquid Crystals: ACS Symposium"; \$2,000 total costs; 07/01/07–12/31/07; role: Principal Investigator.

National Science Foundation (DMR, symposium grant); "Speaker Travel Support for "Polymers and Liquid Crystals" ACS Symposium"; \$3,000 total costs; 08/01/07–01/31/08; role: Principal Investigator.

Army Research Office (STAS Contract); "Breathable' Butyl Rubber Formulation and Test Sample Production"; \$62,689 total costs; 5/30/07–5/29/08; role: Principal Investigator.

National Science Foundation (MRSEC program), "Ferroelectric Liquid Crystal Materials Research Center"; \$6,000,000 total costs; 9/01/02–8/31/08; 11 investigators (N. A. Clark (PI), D. M. Walba, C. N. Bowman, J. E. MacLennan, D. L. Gin, M. A. Glaser, D. K. Schwartz, L. R. Radzihovsky, P. Keller, T. E. Furtak, G. D. Smith); DLG's share: ~\$300,000 total costs (~\$50,000/year including matching funds from CU Graduate School); role: Senior Investigator.

U.S. Army Research Office (Phase 1 STTR subcontract with TDA Research, Inc.); "Breathable Elastomer Membrane Liner for Chemical Agent Protective Garments"; \$100,000 total costs; 08/01/08–01/31/09; 2 investigators (B. J. Elliott (P.I.) and D. L. Gin); DLG's share: \$33,000; role: Co-Principal Investigator and university subcontractor.

National Science Foundation (DMR (Polymers)); "Design and Synthesis of Nanoporous Polymer Resins with New Functional Capabilities Using Monomer Self-Assembly"; \$315,000 total costs; 04/01/06–03/31/09; role: Principal Investigator.

Colorado Center for Biofuels and Biorefining; "Study of New Polymer Membranes with Uniform, Sub-1-nanometer Pores for Molecular-Size-Selective Removal of Water from Bioprocess Product Mixtures"; \$70,665 total costs; 2 investigators (D. L. Gin (P.I.) and R. D. Noble); 01/01/09–12/31/09; DLG's share: ~\$35,333; role: Principal Investigator.

U.S. Army Research Office; "Novel Nanocomposite Structures as Active and Passive Barrier Materials: CBT", \$394,735 total costs; 03/15/07–03/14/10; (R. D Noble (P.I.) and D. L. Gin); DLG's share: ~\$175,000; role: Co-Principal Investigator.

U.S. Army Research Office (DURIP Instrument Program); "Thermogravimetric Analyzer with Mass Spectrometer for Analysis of Nanocomposite Materials for Air Filtration Applications"; \$136,299 total costs; 04/15/09–04/14/10; 2 investigators (R. D. Noble (PI) and D. L. Gin); DLG's share: N/A; role: Co-Principal Investigator.

National Water Research Institute; "American Membrane Technology Association (AMTA) Fellowship"; \$20,000 total costs; 2 investigators (D. L. Gin and E. S. Hatakeyama (PI)); 09/01/08–09/01/10; DLG's share: \$0; role: Co-Principal Investigator.

Kyung Hee University; "Selective CO₂ Separations"; \$30,000 total costs; 06/01/10–05/31/11; 2 investigators (R. D. Noble (PI) and D. L. Gin); DLG's share: \$15,000; role: Co-Principal Investigator.

National Science Foundation (CBET Division (CBS Program)); "PacifiChem 2010 Symposium: New Materials and Concepts for Next Generation Membranes"; \$5,000 total costs; 08/01/10–07/31/11; DLG's share: \$0; role: Principal Investigator.

National Science Foundation (DMR (MRI Program)), "Acquisition of Integrated Small and Wide Angle X-ray Scattering Instrumentation for the Rocky Mountain Region"; \$959,109 total costs (Cost Share: NSF: \$671,376; Colorado State University match: \$287,733); 08/01/08–07/31/11; 4 investigators (T. S. Bailey (PI), E. Y. Chen, D. L. Gin, V. Manivannan (co-PIs)), 6 senior personnel/additional major users (J. Dorgan, R. Finke, S. James, J. Kieft, M. Kipper, Y. Shen); DLG's share: \$0; role: Co-Principal Investigator.

National Science Foundation (Phase 1 SBIR subcontract with Membrane Technology and

Research, Inc.); "Novel Polymeric Membranes Based on Room-Temperature Ionic Liquids for Carbon Dioxide Removal from Shifted Syngas"; \$150,000 total costs; 01/01/11–12/31/11; 3 investigators (M. Zhou (PI), R. D. Noble, and D. L. Gin); DLG's share: \$25,000; role: Co-Principal Investigator and university subcontractor.

Colorado Center for Biofuels and Biorefining (Seed Scholar Program); "Modification of Nanoporous Polymer Membranes by Atomic Layer Deposition for Ethanol/Water Separation"; \$35,000 total costs; 3 investigators (X. Liang (PI), D. L. Gin, and A. W. Weimer; 09/01/11–01/31/12; DLG's share: \$0; role: Co-Principal Investigator/co-Postdoc Advisor.

U.S. Army Research Office (Phase 2 STTR subcontract with TDA Research, Inc.); "Breathable Elastomer Membrane Liner"; \$500,000 total costs; 09/14/09–09/13/12; 2 investigators (B. J. Elliott (PI) and D. L. Gin); DLG's share: \$225,000; role: Co-Principal Investigator and university subcontractor.

U.S. Army Research Office; "Ionic Liquid–Nanoparticle Composite Materials as Novel Air Filtration Media"; \$1,352,878 total costs; 03/10/08–04/09/13 (6-month no cost extension); 2 investigators (R. D. Noble (PI) and D. L. Gin); DLG's share: ~\$600,000; role: Co-Principal Investigator.

National Science Foundation (CBET Division (Chem. & Biol. Separations Program)); "Study and Development of a New Type of Water Nanofiltration Membrane with an Ordered, Sub-one-nanometer Size Pore System"; \$280,000 total costs; 07/01/09–06/30/13 (1-year no cost extension); 2 investigators (D. L. Gin (PI) and R. D. Noble); DLG's share: ca. \$200,000; role: Principal Investigator.

Defense Threat Reduction Agency / Army Research Office (Phase 1 SBIR subcontract with TDA Research, Inc.); "Responsive Containment and Decontamination Coating for Chemical Warfare Agents"; \$32,000 total costs; 06/01/13–11/30/13; 4 investigators (B. J. Elliott (PI) W. A. Ellis II, D. L. Gin, and R. D. Noble); DLG's share: \$16,000 total costs; role: Co-Principal Investigator and university subcontractor.

U.S. Dept. of Energy (Advanced Research Projects Agency – Energy program); "Achieving a 10,000 GPU Permeance for Post-Combustion Carbon Capture with Gelled Ionic Liquid-Based Membranes"; \$3,214,895 total costs; 07/13/10–07/31/14 (with a no-cost extension); 6 investigators (R. D. Noble (PI), D. L. Gin, A. Bhrown, K. A. Berchtold, R. P. Singh, R. Del Soto); DLG's share: \$446,000; role: Co-Principal Investigator.

Total Petrochemicals; matching industrial funds for Advanced Research Projects Agency – Energy grant: "Achieving a 10,000 GPU Permeance for Post-Combustion Carbon Capture with Gelled Ionic Liquid-Based Membranes"; \$600,000 total costs; 07/13/10–07/12/14 (with a no-cost extension); 2 investigators (R. D. Noble (PI), D. L. Gin); DLG's share: \$300,000; role: Co-Principal Investigator.

Membrane Applied Science and Technology Center; "Study of Functionalized Room-temperature Ionic Liquid Membrane Materials for Use in Ethylene/Ethane Gas Separations"; \$127,500 total costs; 09/01/11–08/31/14; 2 investigators (R. D. Noble (PI), and D. L. Gin); DLG's share: ca. \$63,750; role: Co-Principal Investigator.

U.S. Bureau of Reclamation (Desalination and Water Purification Research Program); “Evaluation and Development of a New Type of Polymer-Based Water Desalination Membrane Containing Uniform, Molecular-Size, Ionic Pores”; \$102,826 total costs; 09/19/13–10/31/14 (with a 1-month no-cost extension); 2 investigators (D. L. Gin (PI) and R. D. Noble); DLG’s share: \$51,413; role: Principal Investigator.

National Science Foundation (DMR MRSEC program), "Soft Materials Research Center"; \$7,200,000 total costs; 09/01/08–08/31/15 (with 1-year no-cost extension); 12 investigators total (N. A. Clark (PI), D. M. Walba, (co-PI); D. K. Schwartz, J. E. MacLennan, M. A. Glaser, D. L. Gin, L. R. Radzihovsky, I. I. Smalyukh, G. D. Smith, T. E. Furtak, R. K. Shoemaker (SIs); DLG’s share: ~\$200,000 total costs from CU matching funds (~\$40,000/year); role: Senior Investigator.

Defense Threat Reduction Agency / Army Research Office (Phase 2 SBIR grant with TDA Research, Inc.); "Responsive Sequestration Coating (Phase II)"; \$280,000 total costs (CU share); 06/29/14–06/28/16; 4 investigators (B. J. Elliott (PI), W. A. Ellis II, D. L. Gin, and R. D. Noble); DLG’s share: ca. \$145,000; role: Principal Investigator for CU subcontract grant portion.

U.S. Dept. of Energy (Advanced Research Projects Agency – Energy (ARPA-E) program); “Energy Efficient Electrochemical Capture and Release of Carbon Dioxide”; \$3,625,000 total costs; 08/15/14–08/14/16; 7 investigators (D. Buttry (PI), R. D. Noble, D. L. Gin, K. Ayers, E. Stechel, C. Freisen, and V. Mujica); DLG’s share: ca. \$525,000; role: Co-Principal Investigator and research subcontractor.

Membrane Applied Science and Technology Center; “Novel Membranes for Recovering Water-soluble Fuels and Fuel Intermediates from Fermentation Broths”; \$150,000 total costs; 01/01/13–12/31/16; 2 investigators (R. D. Noble (PI), and D. L. Gin); DLG’s share: \$75,000; role: Co-Principal Investigator.

Defense Threat Reduction Agency / Army Research Office (Phase 2 SBIR grant with TDA Research, Inc.); “Expanded Development of RTIL Coatings for Protection Against CB Threats (Phase II)”; \$75,000 total costs (CU share); 05/01/16–04/23/18 (with no-cost extension); 4 investigators (B. J. Elliott (PI), W. A. Ellis II, D. L. Gin, and R. D. Noble); DLG’s share: ca. \$37,500; role: Principal Investigator for CU subcontract grant portion.

National Science Foundation (Partners for Innovation: Accelerating Innovation Research - Technology Translation (PFI: AIR-TT) program), “Large Area Fabrication of Next Generation Nanofiltration Membranes with Aligned and Stimuli Responsive Nanopores”; \$200,000 total costs; 09/15/16–08/28/18 (with 6-month no-cost extension); 5 investigators (C. O. Osuji (PI), M. Elimelech, R. M. Kasi, D. L. Gin, X. Wu); DLG’s share: \$50,000 total costs; role: Co-Principal Investigator.

U.S. Dept. of Energy (Advanced Research Projects Agency – Energy (ARPA-E) program); “Anion Channel Membranes”; \$3,333,334 total costs; 12/01/16–06/30/19; 6 investigators (R. D. Noble (PI), D. L. Gin, H. H. Funke, P. Liu, Y. Song); DLG’s share: \$745,229; role: Co-Principal Investigator.

Membrane Applied Science and Technology Center; “Nanopore Tuning in Lyotropic Liquid Crystal Membrane Materials for Optimized Water Vapor Transport and Selective Rejection

of CWA Simulants of Interest to DTRA”; \$169,200 total costs; 04/07/16–10/05/19 (with 6-month no-cost extension); 2 investigators (R. D. Noble (PI), and D. L. Gin); DLG’s share: \$84,600; role: Co-Principal Investigator.

U.S. Army Research Office (Phase 1 STTR grant with TDA Research, Inc.); “Rapid Prototyped 3D Printed Filters for CW Protection”; \$150,000 total costs; 05/28/19–11/20/19 (delayed award start); 2 investigators (B. J. Elliott (PI), D. L. Gin); DLG’s share: \$46,000; role: Principal Investigator for CU subcontract grant portion.

Total, S.A.; “Development of Ionic Liquid Polymer-based Materials and Membranes for Selective CO₂/CH₄ Gas Separations”; \$530,000 total costs; 11/15/15–02/29/20; 2 investigators (R. D. Noble (PI) and D. L. Gin); DLG’s share: \$265,000; role: Co-Principal Investigator.

U.S. Dept. of Energy (Phase 2 SBIR subcontract with TDA Research, Inc.); “Molecularly Precise Nanoporous Desalination Membranes”; \$1,000,000 total costs; 07/24/17–04/09/20 (with 12-month no-cost extension); 2 investigators (B. J. Elliott (PI), and D. L. Gin.); DLG’s share \$300,000; role: Principal Investigator for CU subcontract grant portion.

National Science Foundation (DMR MRSEC program); “Soft Materials Research Center (SMRC)”; \$12,000,000 total costs; 09/01/14–08/31/20; 32 investigators total (N. A. Clark (PI), D. M. Walba, (co-PI), plus 30 others as SIs); DLG’s share: ~\$240,000 from CU matching funds (~\$40,000/year); role: Senior Investigator (SI).

U.S. Army Research Office; “Chemical Modifications of Nanoporous Liquid Crystal Polymer Membranes to Improve Stretchability”; \$125,000 total costs; 07/01/19–09/30/20; 2 investigators (D. L. Gin (PI), R. D. Noble); DLG’s share: ca. \$105,790; role: Principal Investigator.

U.S. Army Research Office (Phase 1 STTR grant with TDA Research, Inc.); “Developing a Cost-effective Synthesis of Linear Ring Opening Metathesis Polymers”; \$166,500 total costs; 12/01/20–05/31/21; 2 investigators (B. J. Elliott (PI), D. L. Gin); DLG’s share: \$50,000; role: Principal Investigator for CU subcontract grant portion.

Total, S.A.; “Development of Ionic Liquid Polymer-based Materials and Membranes for Selective CO₂/CH₄ Gas Separations: Amendment 6”; \$199,224 total costs; 03/01/20–08/31/21 (with 6-month no-cost extension); 2 investigators (R. D. Noble (PI) and D. L. Gin); DLG’s share: \$99,612; role: Co-Principal Investigator.

Total American Services; research gift; \$50,000 total costs; 05/23/14–08/31/21; 2 investigators (R. D. Noble (PI), and D. L. Gin); DLG’s share: \$25,000; role: Co-Principal Investigator.

Defense Threat Reduction Agency (via U.S. Army Research Office); “High-MVTR, Stretchable, Biomimetic Porous Polymer Membranes for Chemical/Biological Defense (CBD)”; \$2,410,000 total costs; 03/01/20–02/28/25 (3 grant years + 2 option years); 5 investigators (N. Pomerantz (PI), J. R. Uzarski, D. L. Gin, R. D. Noble, M. R. Shirts); CU’s share of total requested funding: \$1,605,000; DLG’s share: ca. \$949,300; role: Principal Investigator for CU subcontract grant portion.

Because of budget cuts in fundamental research at DTRA due to the COVID-19 pandemic that started in March 2020, this awarded 5-year grant was changed by the sponsor to provide only 2 years of guaranteed funding as add-on allocations to an existing U.S. Army Research Office grant:

Defense Threat Reduction Agency (via U.S. Army Research Office); “Chemical Modifications of Nanoporous Liquid Crystal Polymer Membranes to Improve Stretchability” (2-year add-on funding); \$698,400 total costs; 07/01/20–09/30/22; 3 investigators (D. L. Gin (PI), R. D. Noble, M. R. Shirts); DLG’s share: ca. \$369,560; role: Principal Investigator.

U.S. Army Research Office (Phase 2 STTR grant with TDA Research, Inc.); “Rapid Prototyped 3D Printed Filters for CW Protection”; \$999,998.15 total costs; 02/22/21–02/21/23; 2 investigators (G. Srinivas (PI), D. L. Gin); DLG’s share: \$50,000; role: Principal Investigator for CU subcontract grant portion.

U.S. Army Research Office (Phase 1 STTR grant with TDA Research, Inc.); “5 Volt Lithium Ion Rechargeable Battery”; \$173,000 total costs; 07/14/22–04/23/23 (with 6-month no-cost extension); 2 investigators (B. J. Elliott (PI), D. L. Gin); DLG’s share: \$51,900; role: Principal Investigator for CU subcontract grant portion.

Teaching Record

I. Courses taught

(a) University of Colorado, Boulder

General Chemistry for Engineers (CHEN 1211), freshman undergraduate level (10 times)
 Research Methods and Ethics (CHEN 5838 and CHEN 5333), graduate level (2 times)
 Organic Chemistry 1 (CHEM 3311), sophomore undergraduate level (6 times)
 Organic Chemistry 2 (CHEM 3331), sophomore undergraduate level (1 time)
 Polymer Engineering (CHEN 4460/5460), senior undergraduate/graduate level (3 times)
 Advanced Physical Organic Chemistry (CHEM 5321), graduate level (15 times)
 Polymer Chemistry for Engineers (CHEN 4450/5450), undergraduate/graduate (2 times)
 Material and Energy Balances (CHEN 2120), sophomore undergraduate level (1 time)
 General Chemistry for Engineers Laboratory (CHEM 1211), freshman undergraduate level (1 time)
 Organic Chemistry Laboratories (CHEM 3321, 3341, 3381), sophomore undergraduate level (1 time)

Teaching statistics:

Course	Term	Enrollment	Instructor Rating	Course Rating
CHEM 1211	Fall 2001	383	1.35/4.00	1.61/4.00
CHEN 3838	Fall 2001	15	2.93/4.00	3.13/4.00
CHEM 3331	Spr. 2002	82	3.15/4.00	2.90/4.00
CHEN 4460/ CHEN 5460 (joint)	Fall 2002 Fall 2002	46 8	2.74/4.00 2.14/4.00	2.52/4.00 2.29/4.00
CHEN 5333	Fall 2002	22	3.00/4.00	4.00/4.00
CHEM 5321	Spr. 2003	19	3.00/4.00	3.13/4.00
CHEM 5321	Fall 2003	13	3.55/4.00	3.73/4.00
CHEN 4450/5450	Spr. 2004	24	3.53/4.00	3.58/4.00
CHEM 5321	Fall 2004	11	3.70/4.00	3.60/4.00
CHEN 4460/5460	Spr. 2005	43	2.97/4.00	2.85/4.00
CHEM 5321	Fall 2005	5	4.00/4.00	3.75/4.00

CHEM 1211	Spr. 2006	145	2.76/4.00	2.01/4.00
CHEM 5321	Fall 2006	4	5.7/6.0	5.7/6.0
CHEM 4460/5460	Spr. 2007	69	4.5/6.0	4.2/6.0
CHEM 1211	Spr. 2008	149	4.2/6.0	3.6/6.0
CHEM 3311	Fall 2008	212	4.2/6.0	4.0/6.0
CHEM 1211	Spr. 2009	175	2.4/6.0	2.8/6.0
CHEM 5321	Fall 2009	8	5.8/6.0	5.8/6.0
CHEM 4450/5450	Spr. 2010	11	5.6/6.0	5.6/6.0
CHEM 5321	Fall 2010	15	6.0/6.0	5.8/6.0
CHEM 1211	Spr. 2011	115	4.2/6.0	3.4/6.0
CHEM 5321	Fall 2011	11	4.3/6.0	4.2/6.0
CHEM 1211	Spr. 2012	106	3.7/6.0	3.2/6.0
CHEM 5321	Fall 2012	7	5.7/6.0	5.7/6.0
CHEM 2120	Spr. 2013	103	4.2/6.0	3.9/6.0
CHEM 5321	Fall 2013	13	5.9/6.0	5.8/6.0
CHEM 5321	Fall 2014	19	5.5/6.0	5.2/6.0
CHEM 1211	Spr. 2015	105	4.6/6.0	4.1/6.0
CHEM 5321	Fall 2015	21	5.5/6.0	5.3/6.0
CHEM 1211	Spr. 2016	91	4.5/6.0	4.0/6.0
CHEM 3311	Fall 2016	198	4.1/6.0	4.1/6.0
CHEM 1211	Spr. 2017	100	5.1/6.0	4.0/6.0

[CU Boulder transitioned to all on-line FCQs completion by students after Spring 2017. FCQ results no longer publicly accessible.]

CHEM 3311	Fall 2017	190		
CHEM 1211	Spr. 2018	67		
CHEM 3311	Fall 2018	183		

CHEM 3311	Spr. 2019	83
CHEM 3311	Fall 2019	115
CHEM 1221 (freshman Gen. Chem. Eng. Lab; no lecture)	Spr. 2020	47
CHEM 3321, 3341, & 3381 (sophomore Org. Chem. Labs; no lecture)	Fall 2020	720
CHEM 5321	Fall 2021	10
CHEM 3311	Spr. 2022	85
CHEM 5321	Fall 2022	7
CHEM 5321	Fall 2023	14

(b) University of California, Berkeley

Physical Organic Chemistry (Chem 113), junior/senior undergraduate level (4 times)
 Special Topics (Polymer Chemistry) (Chem 295), graduate level (1 time)
 Polymer Chemistry (Chem 210b), graduate level (5 times)
 Introduction to Organic Chemistry 1 (Chem 112a), sophomore undergraduate level (3 times)

Summary of Teaching Statistics

Course	Times Taught	Average Enrollment	Avg. Instr. Rating
Chem 113	4	32	6.1/7.0
Chem 295	1	10	5.7/7.0
Chem 210b	5	11	5.6/7.0
Chem 112a	3	197	5.2/7.0

II. New course development and innovative teaching activities

(a) University of Colorado, Boulder

- (i) Developed a new curriculum for CHEM 5321 – Advanced Physical Organic Chemistry for Graduate Students that is centered on a problem-solving approach as a means of teaching physical organic chemistry concepts.

- (ii) Developed a new curriculum for CHEN 4450/5450 – Polymer Chemistry for Engineers centering on polymer synthesis and design. This course also included "re-teaching" of traditional organic chemistry concepts such as electron-arrow-pushing and new topics such as advanced transition-metal-catalyzed polymerization processes.
- (iii) Revised the approach for teaching CHEM 3311 – Organic Chemistry I for Non-Majors to center on a visual road map and problem-solving approach to learning and using organic reactions and functional group interconversions.

(b) University of California, Berkeley

- (i) Developed a new curriculum for Chem 113 – Physical Organic Chemistry for Undergraduates that centered on a problem-solving approach as a means of teaching physical organic chemistry concepts.
- (ii) Developed the first polymer chemistry course at UC Berkeley (Chem 210b).
- (ii) Developed two Modular Chemistry Consortium (MC²) teaching modules as part of U.C. Berkeley's undergraduate teaching initiative with the National Science Foundation. One was a modular lecture on biodegradable polymers as a means of teaching the chemistry of carboxylic acid derivatives to sophomore undergraduate organic students. The second module took the form of a stand-alone workbook entitled "Considerations in Designing the Car of the Future: The Life Cycle of Polymers." It focused on the issue of recyclable and non-recyclable polymers in automobiles as a new way to teach alkene and alkyne chemistry to sophomore organic students.

III. Students and Postdoctoral Associates Mentored

(a) University of Colorado, Boulder

(i) Graduate Students

<i>Name</i>	<i>Dates</i>	<i>Present Position</i>
Yanjie Xu	2001–2006 (ChBE) (Ph.D., Dec. 2006)	Inovia Materials LLC, Boulder, CO
Meijuan Zhou	2001–2006 (ChBE) (Ph.D., Dec. 2006)	SABIC-IP, Selkirk, NY
Cory Pecinovsky	2002–2007 (Chem) (Ph.D., Dec. 2007)	Lightwave Logic, Denver, CO
Xiaoyun Lu	2002–2007 (ChBE) (Ph.D., Dec. 2007)	
Nick Cain	2002–2004 (ChBE) (M.S., May 2004)	

Jason Bara	2002–2007 (ChBE) (Ph.D., May 2007)	(co-advised with R. D. Noble) Professor, Univ. of Alabama
Kortney Klinkel	2003–2007 (Chem) (Ph.D., May 2007)	(co-advised with J. R. Hagadorn) U.S. Patent and Trademark Office
Parag Nemade	2004–2007 (ChBE) (Ph.D., May 2009)	(co-advised with R. H. Davis) Amgen, Thousand Oaks, CA
Rob Kerr	2005–2012 (Chem) (Ph.D., May 2012)	Consultant, self-employed
Jacquie Richardson	2005–2006 (Chem)	UG Org Chem Labs Director, CU
Evan Hatakeyama	2006–2010 (ChBE) (Ph.D., Dec. 2010)	(co-advised with R. D. Noble) Chevron, Richmond, CA
Trevor Carlisle	2007–2011 (ChBE) (Ph.D., Dec. 2011)	(co-advised with R. D. Noble) Membr. Tech. & Res., San Bruno, CA
Bret Voss	2007–2011 (ChBE) (Ph.D., Dec. 2011)	(co-advised with R. D. Noble) Boeing, Seattle, WA
Brian Wiesenauer	2008–2013 (Chem) (Ph.D., Dec. 2013)	Arcadis, Clifton Park, NY
Maggie Schenkel	2008–2014 (Chem) (Ph.D., May 2014)	Intel, Hillsboro, OR
Erin Wiesenauer	2009–2013 (Chem) (Ph.D., Dec. 2013)	Self-employed
Blaine Carter	2010–2014 (ChBE) (Ph.D., May 2014)	(co-advised with R. D. Noble) Align Technologies, San Jose, CA
Lily Robertson	2011–2016 (Chem) (Ph.D., May 2016)	Argonne National Lab, Argonne, IL
Andrew Allen	2011–2012 (Chem) (M.S., Dec. 2012)	Trinity Cath. High School, MO
Will McDanel	2011–2015 (ChBE) (Ph.D., May 2015)	(co-advised with R. D. Noble) Pall Corp., Pensacola, FL
Alexandra Chakeres	2012 (ChBE) (M.S., Dec. 2012)	(co-advised with R. D. Noble) Blinker, Inc., Denver, CO
Josh Sloan	2013–2014 (Chem)	

Zhangxing Zhi	2013–2018 (Chem) (Ph.D., Dec. 2018)	Argonne National Lab, Argonne, IL
Dylan Mori	2014–2018 (Chem) (Ph.D., Dec. 2018)	Chameleon Communications Int.
Sarah Dischinger	2014–2018 (ChBE) (Ph.D., Dec. 2018)	(co-advised with R. D. Noble) Holo, Inc., Newark, CA
Zoban Singh	2014–2017 (ChBE) (Ph.D., Dec. 2017)	(co-advised with R. D. Noble) Intel, Hillsboro, OR
Greg Dwulet	2016–2020 (Chem) (Ph.D., May 2020)	Calyx Law, San Francisco, CA
John Malecha	2016–2022 (Chem) (Ph.D., Dec. 2022)	Capacitor Sciences, Menlo Park, CA
Mike McGrath	2016–2018 (ChBE) (Ph.D., May 2020)	(only advised by R. Noble as of 2018)
Collin Dunn	2016–2021 (ChBE) (Ph.D., May 2021)	(co-advised with R. D. Noble) ElectraMet, Lexington, KY
Ben Coscia	2016–2020 (ChBE) (Ph.D., May 2020)	(co-advised with M. R. Shirts and R. D. Noble) Schrödinger, Portland, OR
Fadilah Ibrahim	2018–2019 (Chem) (M.S., May 2019)	
Patrick Li	2018–2022 (Chem) (Ph.D., Aug. 2022)	Intel, Hillsboro, OR
Michelle Hill	2018–2019 (Chem) (M.S., May 2019)	
Lauren Bodkin	2019–2023 (Chem) (Ph.D., Aug. 2023)	ChampionX, Houston, TX
Keira Culley	2021–present (Chem)	

(ii) Undergraduate Students

<i>Name</i>	<i>Dates</i>	<i>Present Position</i>
Ray Park	2002	

Garret Nicodemus	Summer 2004 (ChBE)	Xabis, Inc., Denver, CO
John Cipolla	2004–2005 (ChBE)	
Lauren Kiemele	2004–2006 (Chem) (joint with J. R. Hagadorn)	Research Assistant, UCHSC
Alice Kaminski	2005–2006 (ChBE) (joint with R. D. Noble)	BP
Eric Karp	2005–2007 (ChBE) (joint with D. K. Schwartz)	
Sonja Lessmann	2006–2007 (Chem)	
Jenny Lohr	2007–2008 (ChBE)	
Erin Fortin	Summer 2008 (Chem)	
Kaitlin Baker	2009 (ChBE)	
Julian Edwards	2009–2011 (Chem)	
Will McDanel	Summer 2010 (ChBE) (joint with R. D. Noble)	Pall Corp., Pensacola, FL
Sean Crawford	2012 (Chem) (joint with R. D. Noble)	
Erik Wislinsky	2012–2013 (Chem) (joint with R. D. Noble)	
Catherine Alvarez	2012–2013 (ChBE) (joint with R. D. Noble)	
Don Nguyen	2012–2013 (ChBE) (joint with R. D. Noble)	
Anna Swanson	2012–2013 (ChBE) (joint with R. D. Noble)	
Kyle Staub	2012–2013 (ChBE) (joint with R. D. Noble)	
Erin McDonnell	2013–2016 (ChBE) (joint with R. D. Noble)	
Shu Lee	2013–2014 (ChBE) (joint with R. D. Noble)	

Jason Barton	2013–2014 (ChBE) (joint with R. D. Noble)	
Kimberly Bourland	2015–2017 (ChBE) (joint with R. D. Noble)	ChBE grad student, UT Austin
Andy Basalla	2017–2019 (Chem and ChBE) (joint with R. D. Noble)	
Samantha Hardy	2018–2019 (ChBE) (joint with R. D. Noble)	
Alyson Skeens	2018 (ChBE) (joint with R. D. Noble)	
Kara Moore	2019–2021 (EVEN) (joint with R. D. Noble)	
Marisabel Reinhardt	2019–2021 (Chem)	
Titus Ellison	2020 (EVEN) (joint with R. D. Noble)	
Trey Gerlach	2020 (Chem)	
Samantha Dyer	2020–2022 (Chem)	Biochem. grad student, U. of WA
Grace Patrick	2021 (Chem)	
Zack Krajnak	2021–2023 (Chem)	Chem. grad student, UNC Chapel Hill
Jeffrey Hage	2022 (Chem)	
Roan Gerrald	2023 (ChBE)	
Nav Chidambaram	2023 (Biochem)	
Drew Fehr	2023–present (Chem)	

(iii) Postdoctoral Associates

<i>Name</i>	<i>Dates</i>	<i>Present Position</i>
Tim Kidd	2001–2003	DSM Research (The Netherlands)
Jizhu Jin	2002–2005	Chemical Abstracts Service, OH
J. Shailaja	2002–2005	Sirtris Pharmaceuticals, MA

Wonewoo Seo	2004–2006	Res. Associate, Emory University
Xiaohui Zeng	2004–2006	Chemical Abstracts Service, OH
Chris Gabriel	2006–2009	Micron, Longmont, CO
Jason Bara	2007–2009	Professor, Univ. of Alabama
Yeny Hudiono	2008–2010	Pall Corporation, Cortland, NY
Andy LaFrate	2008–2011	STAR School, Flagstaff, AZ
A. Lee Miller II	2009–2012	Res. Fellow, Mayo Clinic, MN Adj. Teaching Faculty, RCTC, MN
Evan Hatakeyama	2010	Chevron, Richmond, CA
Garret Nicodemus	2011–2012	Xabis, Inc., Denver, CO
Jose Herrera-Alonso	2011	Intel, Chandler, AZ
Phuc Tien Nguyen	2011–2012	Total Energies, Houston, TX
Nate Urban	2011–2013	LLE staff scientist, Univ. of Rochester
Bret Voss	2011–2012	Boeing, Seattle, WA
Trevor Carlisle	2011–2012	Membr. Tech. & Res., San Bruno, CA
Matt Cowan	2012–2016	Sr. Lecturer, Univ. of Canterbury (New Zealand)
Pedro Carvalho	2012	Researcher, University of Aveiro (Portugal)
Rhia Martin	2012–2016	TDA Research, Golden, CO
Trevor Carlisle	2013–2014	Membr. Tech. & Res., San Bruno, CA
Yuki Kohno	2013–2015	AIST (Japan)
Miyuki Masuda	2014–2015	NEDO (Japan)
Alex Lopez	2015–2016	Assoc. Prof., Univ. of Mississippi
Esperanza Adrover	2017	Postdoc, UNS – CONICET
Chamaal Karunaweera	2020–2022	Matheson Trigas, Longmont, CO

(b) University of California, Berkeley**(i) Graduate Students**

<i>Name</i>	<i>Dates</i>	<i>Present Position</i>
David Gray	1994–1999 (Ph.D., May 1999)	Instructor, De Anza College, CA
Ryan Smith	1994–1999 (Ph.D., Dec. 1999)	Associate, Duane Morris LLP, CA
Benjamin Hoag	1994–2000 (Ph.D., May 2000)	Glyptal, Chelsea, MA
Brian Baxter	1994–2000 (Ph.D., Dec. 2000)	GenapSys, Redwood City, CA
Jeff Gruneich	1996–1997 (M.S., Dec. 1997)	
Esther (Kim) Chang	1996–1998 (M.S., Dec. 1998)	Partner, Norton Law, Oakland, CA
Elizabeth Juang	1996–2000 (Ph.D., Dec. 2000)	Assoc. Principal, McKinsey & Co., NJ
Brad Pindzola	1997–2001 (Ph.D., Dec. 2001)	TIAX, Cambridge, MA
Alan Sentman	1998–2003 (Ph.D., May 2003)	Polymer Solutions, Blacksburg, VA

(ii) Undergraduate Students

<i>Name</i>	<i>Dates</i>	<i>Present Position</i>
Jason Tebbutt	1996–1997	
Robert Chen	1996–1997	
Jerry Yu	1997–1998	Zeneca
Orion Jankowski	1998–1999	
Ben Gross	1997–1999	
Juston Smithers	1998–1999	Cleaire, CA

Scott Hammond 1999–2001

David Markevitch 2000–2001

Essential Therapeutics, CA

(iii) Postdoctoral Associates

<i>Name</i>	<i>Dates</i>	<i>Present Position</i>
Walter Fischer	1995–1996	Chemson (Austria)
Martin Cooper	1996–1997	
Hai Deng	1997–1998	Professor, Fudan University, China
Mary Reppy	1997–1999	Abacalab, Inc., Wilmington, DE
Julia Ding	1998–1999	Waters Corporation, Taunton, MA
Seth Miller	1998–2000	Heron Scientific, Longmont, CO
Wen-Jing Zhou	1999–2001	DuPont Powder Coatings, Houston
Weiqiang Gu	2000–2002	Waters Corporation, Taunton, MA

Service Activities

I. Professional Service

(a) Reviewing

Regular reviewer of grant proposals for: the National Science Foundation, the U.S. Army Research Office, the ACS Petroleum Research Fund, Research Corporation, the U.S. Department of Energy, and the Advanced Research Projects Agency – Energy program.

Reviewer of manuscripts for: *Journal of the American Chemical Society*, *Macromolecules*, *Chemistry of Materials*, *Advanced Materials*, *Angewandte Chemie International Edition*, *Advanced Functional Materials*, *Synthetic Metals*, *Macromolecular Science and Physics*, *Journal of Organic Chemistry*, *Synlett*, *Science*, *Journal of Polymer Science Part A*, *Chemistry – A European Journal*, *Langmuir*, *Chemical Reviews*, *Organic Letters*, *Chemical Communications*, *Biomacromolecules*, *Accounts of Chemical Research*, *Journal of Membrane Science*, *Desalination*, *Journal of Physical Chemistry*, *Polymer Reviews*, *Chemical Science*, *Liquid Crystals*, *Soft Matter*, *Polymer*, *Industrial Engineering Chemistry Research*, *Nanoscience and Nanotechnology*, *ACS Sustainable Chemistry and Engineering*, *ACS Applied Materials and Interfaces*, *ACS Macro Letters*, *Polymer Chemistry*, *New Journal of Chemistry*, *Chemistry – An Asian Journal*, *Nature Reviews Materials*, *Chemistry Open*, *Nature Communications*, *ACS Applied Polymer Materials*, *Polymer International*, *ACS Omega*

(b) Editorial Service

Member, Editorial Advisor Board of *Polymer Journal*

2012–present

(c) Meeting Symposia and Session Service

Session chair for the "Metal-Containing Polymers and Extended Structures" session in the "Supramolecular Transition-Metal Chemistry" symposium at the 214th American Chemical Society National Meeting, Las Vegas, NV, September 8, 1997.

Session chair for the "Nanostructured Organic Materials: Synthesis, Characterization, and Application" session at the 217th American Chemical Society National Meeting, Anaheim, CA, March 23, 1999.

Session chair for the "Polymer Nanocomposites: Structure and Dynamics" session at the 219th American Chemical Society National Meeting, San Francisco, CA, March 28, 2000.

Session chair for the "Supramolecular Chemistry" session at the National Academy of Sciences Chinese–American Frontiers of Science conference, Irvine, CA, October 22, 2000.

Co-chair and co-organizer for the chemistry session of the 2001 National Academy of Science Chinese–American Frontiers of Science symposium, Beijing, China, September 21–

23, 2001.

Co-organizer for the "Organic Methodologies in the Selective Synthesis of Small Molecules and Materials" symposium in the Division of Organic Chemistry, 224th American Chemical Society National Meeting, Boston, MA, August 18–21, 2002.

Meeting co-organizer and co-chair of the chemistry session for the 2002 National Academy of Science Chinese-American Frontiers of Science symposium, Irvine, CA, November 22–24, 2002.

Co-organizer for the "Polymer Chemistry in Nanotechnology" symposium in the Division of Polymer Chemistry, 226th American Chemical Society National Meeting, New York, NY, September 7–9, 2003.

Meeting organizer for the "Frontiers in Liquid Crystals and Molecular Self-Assembly" workshop, University of Colorado, Boulder, CO, June 10–12, 2004.

Session chair for the "Hybrid and Dissipative Structures" session in the "Dynamic, Self-Organized Systems in Multifunctional Nanomaterials and Nanostructures" symposium at the Spring 2005 Materials Research Society Meeting, San Francisco, CA, March 30, 2005.

Session chair for the symposium on “The Fusion of Macromolecular, Supramolecular, and Organic Chemistry” at the Society of Polymer Science Japan’s 8th International Polymer Conference, Fukuoka, Japan, July 29, 2005.

Session chair for the “Nanostructured Polymer Materials” session at the 2006 International Symposium on Polymer Chemistry, Dalian, P. R. China, June 8, 2006.

Session chair for the "Exotic Soft Materials" session at the 2006 International Liquid Crystal Conference, Keystone, CO, July 4, 2006.

Co-organizer for the “Robert H. Grubbs Nobel Prize Symposium and Celebration at Caltech,” Pasadena, CA, July 21–22, 2006.

Co-organizer and session chair for the “Polymers and Liquid Crystals” symposium in the Division of Polymer Chemistry at the 234th American Chemical Society National Meeting, Boston, MA, Aug. 19–23, 2007.

Food coordinator/catering chair for the 2008 International Congress on Membranes and Membrane Processes (ICOM 2008), Honolulu, HI, July 12–18, 2008.

Session chair for the “Molecular Self-Assembly: New Advances and Applications. Towards Applications” session at the 236th American Chemical Society National Meeting, Philadelphia, PA, August 20, 2008.

Panel presenter for the Boulder Innovation Center / CU Technology Transfer Office inventor & startup company workshop, Boulder, CO, April 13, 2009.

Session chair for the “New Frontiers in Nanotechnology” session in the “Polymerizations in Nanostructured and Nanocomposite Systems” symposium at the 237th American Chemical

Society National Meeting, Salt Lake City, UT, March 24, 2009.

Local host and session chair for the National Organic Symposium, Boulder, CO, June 7–11, 2009.

Session chair for the Nanotechnology 11 session at the 8th World Congress of Chemical Engineering, Montreal, QC, Canada, August 27, 2009.

Head organizer for the “New Materials and Concepts for Next Generation Membranes” symposium (symposium # 165) at the 2010 International Chemical Congress of Pacific Basin Societies (i.e., Pacifichem 2010), Honolulu, HI, Dec. 15–16, 2010.

Morning session chair for the “New Materials and Concepts for Next Generation Membranes” symposium (symposium # 165) at the 2010 International Chemical Congress of Pacific Basin Societies (i.e., Pacifichem 2010), Honolulu, HI, Dec. 16, 2010.

Morning session chair for the “Molecular-based Ordered Materials Formed Through Self-Organization” symposium (symposium # 102) at the 2010 International Chemical Congress of Pacific Basin Societies (i.e., Pacifichem 2010), Honolulu, HI, Dec. 20, 2010.

Invited panel member for Defense Threat Reduction Agency Brainstorming Workshop on “Multifunctional Materials for Directed Agent Transport and Concentration,” Cambridge, MA, November 29, 2011.

Invited discussion leader for the “Membrane Material Systems” talk session at the 2014 Membranes: Materials and Processes Gordon Research Conference, Colby-Sawyer College, New London, NH, July 10, 2014.

Organizer and session chair for the “ACS Award in Separations Science and Technology: Symposium in Honor of Richard D. Noble” symposium at the 249th American Chemical Society National Meeting, Denver, CO, March 22, 2015.

Co-organizer for the “Nanostructured Porous Polymers: Synthesis, Properties, and Applications” symposium at the 249th American Chemical Society National Meeting, Denver, CO, March 22–23, 2015.

Session chair for the session entitled “Nanostructured Porous Polymers as Sorbents” at the “Nanostructured Porous Polymers: Synthesis, Properties, and Applications” symposium at the 249th American Chemical Society National Meeting, Denver, CO, March 23, 2015.

Organizer and session chair for the “Herman F. Mark Young Scholar Award in Honor of Garret Miyake” symposium at the 254th American Chemical Society National Meeting, Washington, DC, August 20, 2017.

II. Department/University Service

(a) University of Colorado, Boulder

Member, Prom. & Tenure Subcommittee for M. Marshak, Chemistry 2022–2023

Member, Post-tenure Review Committee, Chemistry	2021–present
Member, Prom. & Tenure Subcommittee for J. Park, Chemistry	2021–present
Member, Mentoring Committee for J. Park, Chemistry	2020–present
Member, Mentoring Committee for M. Marshak, Chemistry	2020–present
Member, Promotion Subcommittee for M. Walczak, Chemistry	2020–present
Member, Manager of Building Operations interview committee, Chemistry	2020
Vice-chair, Cristol Building Renovation Committee, Chemistry	2019–2020
Member, Accounting Technician III interview committee, Chemistry	2019
Member, Dept. Rules Committee, Chemistry	2019–2020
Chair, MSE Graduate Program Committee, Chemistry	2019–2020
Chair, Graduate Admissions Committee, Chemistry	2019–2020
Member, Prom. & Tenure Subcomm. for M. Walczak, Chemistry	2019–2020
Chair, Faculty Awards Committee, Chemistry	2018–2020
Prospective graduate student visits dinner organizer, Org. Division and Mater. & Nanosci. Division Graduate Recruiting Committees, Chemistry	2018–2019
Member, Funct. Mater. & Complex Matter Faculty Search Committee, Chemistry	2018–2019
Member, Graduate Scholastic Committee, Chemistry	2018–2020
(Co-)Chair, Materials & Nanosci. Graduate Program, Chemistry	2018–present
Chair, Courtesy Appointment Evaluation Committee for Rich Noble (ChBE), Chem. & Biochem.	2018
Member, Graduate Committee, Chemistry	2018–2020
Member, Promotion Subcommittee for X. Wang, Chemistry	2018–present
Member, Special Dept. Committee, Chem. & Biochem.	2018
Member, Funct. Mater. & Complex Matter Faculty Search Committee, Chem. & Biochem.	2017–2018
Member, Promotion Subcommittee for X. Wang, Chem. & Biochem.	2017–2018

Member, NMR Director Search Committee, Chem. & Biochem.	2017
Member, Tenure and Promotion Committee, Chem. & Biol. Eng.	2016–2018
Member, Graduate Scholastic Committee, Chem. & Biochem.	2015–2018
Member, Organic Division and Materials & Nanoscience Program Graduate Recruiting Committee, Chem. & Biochem.	2014–2015
Chair, Promotion Subcommittee for W. Zhang, Chem. & Biochem.	2014–2018
Member, Prom. & Tenure Subcomm. for G. Miyake, Chem. & Biochem.	2014–2017
Member, Prom. & Tenure Subcommittee for X. Wang, Chem. & Biochem.	2014–2015
(Co-)Chair, Materials & Nanosci. Graduate Program, Chem. & Biochem.	2014–2018
Chair, Prom. & Tenure Subcommittee for W. Zhang, Chem. & Biochem.	2013
Chair, Prom. & Tenure Subcommittee for X. Wang, Chem. & Biochem.	2012–2014
Co-chair, Tenure and Promotion Committee, Chem. & Biol. Eng.	2012–2016
Member, Faculty/Staff Awards Committee, Chem. & Biol. Eng.	2012–2016
Member, CU Boulder Executive Advisory Council for the Office of the Vice Chancellor for Research and the Graduate School	2011–2014
Member, Teaching Schedule Committee, Chem. & Biochem.	2011–2013
Co-Chair, Materials & Nanosci. Graduate Program, Chem. & Biochem.	2011–2013
Member, Academic Dishonesty Committee, Chem. & Biol. Eng.	2011–2012
Chair, Tenure and Promotion Committee, Chem. & Biol. Eng.	2011–2012
Member, ARP Self-Study Committee, Chem. & Biol. Eng.	2010
Member, Prom. & Tenure Subcommittee for W. Zhang, Chem. & Biochem.	2010–2013
Member, Prom. & Tenure Subcommittee for X. Wang, Chem. & Biochem.	2010–2012
Conflict of Interest Monitor for Prof. Steve George, Chem. & Biochem.	2010–2015
Senior faculty mentor to Asst. Professor Wei Zhang, Chem. & Biochem.	2009–2013
Co-chair, Materials & Nanosci. Graduate Program, Chem. & Biochem.	2009–2011
Member, Program Plan for Renovations Committee, Chem. & Biochem.	2009–2011

Member, Dept. Rules Committee, Chem. & Biochem.	2009–2012
Co-chair, Tenure and Promotion Committee, Chem. & Biol. Eng.	2008–2011
Member, Faculty/Staff Awards Committee, Chem. & Biol. Eng.	2008–2011
Member, Graduate Committee, Chem. & Biol. Eng.	2008–2009
Member, Nanoscience Fac. Search Committee, Chem. & Biochem.	2008–2009
Former Chair; Member, Matls Faculty Search Committee, College of Eng.	2008
Member, Materials Faculty Search Committee, Chem. & Biochem.	2007–2008
Member, Committee on University Discoveries	2006–2011
Member, Faculty Leadership Advisory Group, College of Engineering	2006–2009
Member, Graduate Admissions Committee, Chem. & Biochem.	2002–2008
Member, Chem. & Biol. Engineering Graduate Committee	2002–2007
Chair, Graduate Admissions Committee, Chem. & Biochem.	2002–2005
ChBE representative to the College of Engineering's Nano/Micro Characterization Facility	2003–2006
Undergrad Materials Option Co-advisor, Chem. Eng.	2003–2010
Space Committee Chair, Chem. & Biol. Eng.	2004–2006
Member, Executive Committee, Chem. & Biochem.	2005–2006
Seminar co-chair, Chem. & Biol. Eng.	2005–2006

(b) University of California, Berkeley

Organic Chemistry Seminar Chair	1995–1996 1999–2000
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- Established and solicited funding for 3 industrially sponsored polymer lectureships:

Raychem Polymer Lectureship (\$2000/year for 3 years)

3M Polymer Lectureship (\$2000/year for 2 years)

Rohm and Haas Polymer and Materials Lectureship (\$7000/year for 5 years)

Committee on Undergraduate Scholarships and Honors	1996–1997
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Department of Chemistry Curriculum Committee	1997–1998
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Department of Chemistry Teaching Awards Committee	1997–1998
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III. Outreach

University of Colorado Boulder

Co-PI, CCHE Center of Excellence outreach development project	2003
Mentor, Research Experience for Teachers program (5 times)	2002–2004, 2006, 2007
Mentor, Research Experience for Undergraduates program (4 times)	2006, 2007, 2010, 2011
Materials Science from CU lecture and demonstration helper	2006, 2009, 2011
Boulder Valley School District high school science fair judge	2010
Talk and lab tour for Professional Development in Nanoscience and Technology for High School Science Teachers conference	2010
Lecturer on introduction to polymers to high school teachers attending the MESA Advisor Retreat and Kick-Off meeting at CU Boulder	2011
Lecturer on new nanofiltration membrane technology to high school science teachers at the National Science Teachers Association conference in Denver, CO (Dec. 14, 2013).	2013