

**Douglas L. Gin**  
**University of Colorado, Boulder**

**Curriculum Vitae**

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## Douglas L. Gin

### *Biographical Information*

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Date and Place of Birth:

January 6, 1966; Ashcroft, BC, Canada. (U.S. Permanent Resident)

### *Educational Background*

Ph.D. in Chemistry, California Institute of Technology. June 1993  
 Research Advisor: Robert H. Grubbs (Nobel Prize in Chemistry, 2005)

B.Sc. (Honours) in Chemistry, University of British Columbia. May  
 1988

### *Academic Employment History*

Professor 2005–present  
 Dept. of Chemical & Biological Engineering, and  
 Dept. of Chemistry & Biochemistry, CU Boulder

Associate Professor 2001–2005  
 Dept. of Chemical & Biological Engineering, and  
 Dept. of Chemistry & Biochemistry, CU Boulder

Assistant Professor of Chemistry, University of California, Berkeley, CA.	1994–2001
Faculty scientist, Lawrence Berkeley National Laboratory	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***

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) 2000	1996–
Regents' Junior Faculty Fellow, U.C. 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 List***

### **(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.; Thiessl, U.; Gadermaier, C.; Zojer, E.; Kriechbaum, M.; Amenitsch, H.; Gin, D.;\* Smith, R.; Leising, G.\* "The H<sub>2</sub>-phase of the Lyotropic Liquid Crystal Sodium 3,4,5-Tris( $\omega$ -acryloxyundecyloxy)benzoate," *Liq. Cryst.* **2000**, 27 (3), 407–411.
26. Pindzola, B. A.; Gin, D. L.\* "Lyotropic Liquid-Crystalline Phase Behavior of Some Alkyltrimethylphosphonium Bromides," *Langmuir* **2000**, 16 (16), 6750–6753.
- 27.‡ Resel, R.; Leising, G.;\* Markart, P.; Kreichbaum, M.; Smith, R.; Gin, D.\* "Structural Properties of Polymerised Lyotropic Liquid Crystal Phases of 3,4,5-Tris( $\omega$ -acryloxyalkoxy)benzoate Salts," *Macromol. Chem. Phys.* **2000**, 201 (11), 1128–1133.  
‡(Coverpage article)
28. 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.
29. Hoag, B. P.; Gin, D. L.\* "Cross-linkable Liquid Crystal Monomers Containing 1,3-Diene Tail Systems," *Macromolecules* **2000**, 33 (23), 8549–8558.
30. 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.
31. Yonezawa, K.; Gin, D.\* "Probing Matrix Isolation Effects in Lyotropic Liquid Crystal Nanocomposites using Water-soluble PPV," *Synth. Met.* **2001**, 121, 1291–1294.
32. 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.
33. 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.
34. 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.
35. Sentman, A. C.; Gin, D. L.\* "Fluorescent Trimeric Liquid Crystals: Modular Design of Emissive Mesogens," *Adv. Mater.* **2001**, 13 (18), 1398–1401.
36. Gin, D. L.;\* Gu, W. "Nanoporous Catalytic Materials with Organic Frameworks," *Adv. Mater.* **2001**, 13 (18), 1407–1410.
37. 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.
38. 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.; Ilshner, B.; Kramer, E. J.; Mahajan, S.; Eds; Elsevier, 2001. (invited review article)
39. Gin, D. L.;\* Gu, W.; Pindzola, B. A.; Zhou, W.-J. "Polymerized Lyotropic Liquid Crystal Assemblies for Materials Applications," *Acc. Chem. Res.* **2001**, 34, 973–980. (invited,

peer-reviewed review article)

40. 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.
41. 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.
42. 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.
43. 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.
44. 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*, 6346–6348.
45. ‡ 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.)
46. Hoag, B. P.; Gin, D. L.\* "Polymerizable Hexacatenar Mesogens Containing a Luminescent Oligo(*p*-phenylenevinylene) Core," *Liq. Cryst.* **2004**, *31* (2), 185–199.
47. 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.
48. 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.
49. 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*, 1850–1853.
50. 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.
51. 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.
52. 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.
53. 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)
54. Klinkel, K. L.; Kiemele, L. A.; Gin, D. L.; Hagadorn, J. R.\* “Rapid Phosphorus Triester Hydrolysis Catalyzed by Bimetallic Tetrabenzimidazole Complexes,” *Chem. Commun.* **2006**, 2919–2921.
  55. † 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)
  56. 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.
  57. 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.
  58. 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.
  59. 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.
  60. Bara, J. E.; Gabriel, C. J.; Lessmann, S.; Carlisle, T. K.; Finotello, A.; Gin, D. L.;\* Noble, R. D.\* “Enhanced CO<sub>2</sub> Separation Selectivity in Oligo(ethylene glycol) functionalized Room Temperature Ionic Liquids,” *Ind. Eng. Chem. Res.* **2007**, *46* (16), 5380–5386.
  61. 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.
  62. † 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.)
  63. 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.
  64. † 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.)

65. 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)
66. 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.
67. 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.
68. Bara, J. E.; Gabriel, C. J.; Hatakeyama, E. S.; Carlisle, T. K.; Lessmann, S.; Noble, R. D.;\* Gin, D. L.\* “Improving CO<sub>2</sub> Selectivity in Polymerized Room-Temperature Ionic Liquid Gas Separation Membranes through Incorporation of Polar Substituents,” *J. Membr. Sci.* **2008**, 321, 3–7.
69. Bara, J. E.; Hatakeyama, E. S.; Gin, D. L.;\* Noble R. D.\* “Improving CO<sub>2</sub> Permeability in Polymerized Room-Temperature Ionic Liquid Gas Separation Membranes through the Formation of a Solid Composite with a Room-Temperature Ionic Liquid,” *Polym. Adv. Technol.* **2008**, 19, 1415–1420.
70. 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.
71. Carlisle, T. K.; Bara, J. E.; Noble, R. D.;\* and Gin, D. L.\* “Interpretation of CO<sub>2</sub> Solubility and Selectivity in Nitrile-Functionalized Room-Temperature Ionic Liquids using a Group Contribution Approach,” *Ind. Eng. Chem. Res.* **2008**, 47 (18), 7005–7012.
72. Camper, D.; Bara, J. E.;\* Gin, D. L.; Noble, R. D.\* “Room-Temperature Ionic Liquid–Amine Solutions: Tunable Solvents for Efficient and Reversible Capture of CO<sub>2</sub>,” *Ind. Eng. Chem. Res.* **2008**, 47 (21), 8496–8498.
73. Bara, J. E.; Gabriel, C. J.; Carlisle, T. K.; Camper, D.; Finotello, A.; Gin, D. L.;\* Noble, R. D.\* “Gas Separations in Fluoroalkyl-functionalized Room-Temperature Ionic Liquids Using Supported Liquid Membranes,” *Chem. Eng. J.* **2009**, 147, 43–50.
74. Hatakeyama, E. S.; Ju, H.; Gabriel, C. J.; Lohr, J. L.; Bara, J. E.; Noble, R. D.; Freeman, B. D.;\* Gin, D. L.\* “New Protein-resistant Coatings for Water Filtration Membranes Based on Quaternary Ammonium and Phosphonium Polymers,” *J. Membr. Sci.* **2009**, 330, 104–116.

#### In press:

75. Bara, J. E.; Gin, D. L.; Noble, R. D.\* “Effect of Anion on Gas Separation Performance of Polymer–Room-Temperature Ionic Liquid Composite Membranes,” *Ind. Eng. Chem. Res.* **2009**, in press.

76. Bara, J. E.; Carlisle, T. K.; Gabriel, C. J.; Camper, D.; Finotello, A.; Gin, D. L.;\* and Noble, R. D.\* "A Guide to CO<sub>2</sub> Separations in Imidazolium-based Room-temperature Ionic Liquids," *Ind. Eng. Chem. Res.* **2009**, in press.

**Submitted:**

77. Bara, J. E.; Noble, R. D.;\* Gin, D. L.\* "Effect of "Free" Cation Substituent on Gas Separation Performance of Polymer–Room-Temperature Ionic Liquid Composite Membranes," *Ind. Eng. Chem. Res.* **2009**, submitted.
78. Bara, J. E.; Carlisle, T. K., Noble, R. D.\*; Gin, D. L.\* "Effect of "Free" Cation Content on Gas Separation Performance of Polymer—Room-Temperature Ionic Liquid Composite Membranes," *J. Membr. Sci.* **2009**, submitted.
79. Voss, B. A.; Bara, J. E.; Gin, D. L.\*; Noble, R. D.\* "Physically Gelled Supported Ionic Liquid Membranes with Enhances CO<sub>2</sub> Gas Transport," *Chem. Mater.* **2009**, submitted.
80. LaFrate, A. L.; Bara, J. E.; Gin, D. L.\*; Noble, R. D.\* "Synthesis of Diol-functionalized Imidazolium-based Room-Temperature Ionic Liquids with Bis(trifluoromethanesulfonimide) Anions that Exhibit Switchable Water Miscibility," *Ind. Eng. Chem. Res.* **2009**, submitted.

**(b) Conference Proceedings**

**Peer-reviewed:**

1. Smith, R. C.; Deng, H.; Fischer, W. M.; Gin, D. L.\* "Controlling Materials Architecture on the Nanometer-Scale: PPV Nanocomposites via Polymerizable Lyotropic Liquid Crystals," *Mater. Res. Soc. Symp. Proc.* **1998**, 488, 419–424.
2. Hoag, B.; Gin, D. L.\*; Theissl, U.; Zojer, E.; Leising, G.\* "Fluorescent Hexacatenar Liquid Crystals," *Mater. Res. Soc. Symp. Proc.* **1999**, 560, 277–282.
3. Gin, D. L.\*; Xu, Y.; Gu, W.; Zhou, M.; Kidd, T. J.; and Sentman, A. C. "Functional Nanostructured Materials via the Polymerization of Liquid Crystal Assemblies," *Trans. Mater. Res. Soc. Jpn.* **2004**, 29 (7), 3113–3118.

**Non-peer-reviewed:**

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2. Claverie, J. P.; Gin, D. L.; Conticello, V. P.; Hampton, P. D.; Grubbs, R. H.\* "Transition-Metal-Catalyzed Polymerization of Cyclohexadiene and Substituted Cyclohexadienes," *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **1992**, 33 (1), 1020–1021.
3. Gin, D. L.; Conticello, V. P.; Grubbs, R. H.\* "A New Route to Poly(*p*-phenylene): Stereoregular Precursors via Transition-Metal Catalyzed Polymerization," *Polym. Mater. Sci. Eng. Preprints* **1992**, 67, 87–88.

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5. Gray, D. H.; Gin, D. L.\* "Synthesis of Ordered Nanocomposites via a Monomer Self-Assembly Approach," *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **1996**, 37 (1), 506–507.
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8. Gray, D. H.; Gin, D. L.\* "Highly Ordered Polymer–Inorganic Nanocomposites via a Monomer Self-Assembly–In Situ Condensation Approach," *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **1997**, 38 (1), 213–214.
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36. Gin, D. L.;\* Pecinovsky, C. S.; Zhou, M.; Lu, X.; Kidd, T. J.; Bara, J. E.; Zeng, X.; Elliott, B. J.; Noble, R. D. "New Approaches to the Design of Nanoporous Catalysts and Membranes Based on Polymerized Lyotropic Liquid Crystal Assemblies," *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2007**, *48* (2), 764–765.

### (c) Patents

1. Grubbs, R. H.; Gin, D. L.; Conticello, V. P.; Hampton, P. D.; Wheeler, D. R. "Polymerizations of *cis*-5,6-Bis(trimethylsiloxy)-1,3-Cyclohexadiene and Other Substituted Cyclohexadienes," U.S. Patent No. 5,128,418; issued July 7, 1992.
  2. Grubbs, R. H.; Gin, D. L.; Conticello, V. P. "Polymerizations of *cis*-5,6-Bis-(trimethylsiloxy)-1,3-Cyclohexadiene and Other Substituted Cyclohexadienes, Continuation-in-part of U.S. Patent 5,128,418," U.S. Patent No. 5,122,574; issued June 16, 1992.
  3. Grubbs, R. H.; Gin, D. L.; Conticello, V. P. "Polymerizations of *cis*-5,6-Bis-(trimethylsiloxy)-1,3-Cyclohexadiene and Other Substituted Cyclohexadienes, Division of U.S. Patent 5,122,574," U.S. Patent No. 5,191,025; issued March 2, 1993.
  4. Grubbs, R. H.; Gin, D. L.; Conticello, V. P. "Polymerizations of *Cis*-5,6-Bis-(trimethylsiloxy)-1,3-Cyclohexadiene and Other Substituted Cyclohexadienes, Divisional Application of U.S. Patent 5,128,418," U.S. Patent Application No. 07/831,788; 1992.
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5. Gin, D. L.; Gray, D. H.; Fischer, W. M.; Smith, R. C. "Ordered Nanocomposites and Nanoporous Polymer Membranes From Lyotropic Liquid-Crystalline Monomers," U.S. Patent No. 5,849,215; issued December 15, 1998.
  6. Gin, D. L.; Kim, E.; Deng, H.; Gray, D. H.; Fischer, W. M.; Smith, R. C. "Nanocomposites, Nanoporous Polymer Membranes, and Catalysts," Provisional U.S. Patent Application No.

60/060,482; filed September 30, 1997.

7. Gin, D. L.; Zhou, M.; Noble, R. D. "Liquid Crystal Nanofilter Membranes," U.S. Patent Application PCT/US03/31429, filed October 3, 2003; International Patent Application WO2004/060531 A1, published July 22, 2004.
8. Gin, D. L.; Gu, W.; Xu, Y. "Nanostructured Polymeric Acid Resins for Heterogeneous Catalysis," Provisional U.S. Patent Application No. 60/447,664, filed February 14, 2003.
9. Gin, D. L.; Gu, W.; Xu, Y.; Pecinovsky, C. S. "Functionalized Nanostructured Lyotropic Liquid Crystal Polymers," U.S. Patent Application 10/544,322, filed February 13, 2004.
10. Gin, D. L.; Bara, J. E.; Noble, R. D.; Zeng, X. "Surfactants and Polymerizable Surfactants Based on Room-temperature Ionic Liquids (RTILs) that Form Bicontinuous Cubic Lyotropic Liquid Crystal Phases with Water and Other RTILs," U.S. Patent Application, filed July 3, 2006.
11. Wyse, C. L.; Torres, R.; Millward, A. R.; Noble, R. D.; Bara, J. E.; Gin, D. L. "Fluid Storage and Purification Method," U.S. Patent Application 12/041,574, filed April 10, 2008.
12. Gin, D. L.; Zhou, M.; Noble, R. D. "Lyotropic Liquid Crystal Membranes Based on Cross-linked Type I Bicontinuous Cubic Phases," Provisional U.S. Patent Application 60/938,126, filed May 15, 2007.
13. Gin, D. L.; Hatakeyama, E. S.; Gabriel, C. J.; Freeman, B. D.; Ju, H. "Polymer Coatings that Resist Adsorption of Proteins," Provisional U.S. Patent Application 60/973,204, filed September 18, 2007.
14. Bara, J. E.; Hatakeyama, E. S.; Gin, D. L.; Noble, R. D. "Heteroaryl Salts and Methods for Producing and Using the Same," Provisional U.S. Patent Application 61/012,893, filed December 12, 2007.
15. Camper, D.; Bara, J. E., Gin, D. L., Noble, R. D. "Compositions and Methods for Removing Acid Gas," Provisional U.S. Patent Application, filed May 5, 2008.
16. Gin, D. L.; Zhou, M.; Noble, R. D.; Bara, J. E.; Wiesenauer, B. R.; Kerr, R. L. "Lyotropic Liquid Crystal Membranes Based on Cross-Linked Type I Bicontinuous Cubic Phases," U.S. Patent Application 12/121617, filed May 15, 2008.

## ***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.

**(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.
- (51) Session on "Chemical Engineering in Materials Technology" at the China/USA/Japan Joint Chemical Engineering Conference, Beijing, China, October 11, 2005.
- (52) Session on "Self-Assembled Materials and Liquid Crystals (#31)" at the 2005 International Chemical Congress of Pacific Basin Societies, Honolulu, HI, December 16, 2005.
- (53) 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.
- (54) Session on "Nanostructured Polymer Materials" at the 2006 International Symposium on Polymer Chemistry, Dalian, P. R. China, June 8, 2006.
- (55) Warwick 2006 Macro Group UK International Conference on Polymer Synthesis. Warwick, UK, July 31, 2006.
- (56) Session on "Materials Chemistry" at the 19<sup>th</sup> Rocky Mountain Regional American Chemical Society Meeting, Tucson, AZ, October 16, 2006.
- (57) American Chemical Society Colorado Section Award talk, Boulder, CO, January 22, 2007.
- (58) "Symposium in Honor of Richard Noble: I&EC Fellow Award" at the 233rd

American Chemical Society National Meeting, Chicago, IL, March 25, 2007.

- (59) Symposium on “Recent Advances in Photopolymerization” at the Spring 2007 Materials Research Society Meeting, San Francisco, CA, April 11, 2007.
- (60) Symposium on “Polymers and Liquid Crystals” at the 234th American Chemical Society National Meeting, Boston, MA, August 21, 2007.
- (61) Symposium on “Nanoscience and Nanotechnology for Chemical and Biological Defense” at the 234th American Chemical Society National Meeting, Boston, MA, August 22, 2007.
- (62) 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.
- (63) Session on “Design of Nanoporous Materials” at the Nanoporous Materials 5 Conference, Vancouver, BC, Canada, May 26, 2008.
- (64) Session on “Nanostructured Membranes II” at the 2008 International Congress on Membranes and Membrane Processes, Honolulu, HI, July 15, 2008.
- (65) 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.
- (66) Session on “Molecular Self-Assembly: New Advances and Applications. Towards Applications” at the 236th American Chemical Society National Meeting, Philadelphia, PA, August 20, 2008.
- (67) Session on “Ionic Liquids: From Knowledge to Application” at the 236th American Chemical Society National Meeting, Philadelphia, PA, August 17, 2008.
- (68) Session on “Novel, Multifunctional Materials” at the 2008 Chemical & Biological Defense Physical Sciences & Technology Conference, New Orleans, LA, November 19, 2008.
- (69) U.S. Army Research Office Workshop on Colloid and Surfactant Science Basic Research (Organic and Inorganic Chemistry Division), Napa, CA, March 10, 2009.

**(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.

## **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 Pd<sup>0</sup> 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 221th 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 221th 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 221th 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, 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 National 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 National 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 CO<sub>2</sub> 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 Polymnerized 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 236<sup>th</sup> 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.

## ***Grants and Research Funding***

### **I. Active Research Grants**

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.

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; "Ionic Liquid–Nanoparticle Composite Materials as Novel Air Filtration Media"; \$1,152,878 total costs; 2/01/08–1/31/11; 2 investigators (R. D. Noble (PI) and D. L. Gin); DLG's share: ~\$500,000; role: Co-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 (DMR MRSEC program), "Soft Materials Research Center"; \$7,200,000 total costs; 09/01/08–08/30/14; 12 investigators total (N. A. Clark (P.I.); 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 (~\$40,000/year); role: Senior Investigator.

National Water Research Institute; "American Membrane Technology Association (AMTA) Fellowship"; \$10,000 total costs; 2 investigators (D. L. Gin (P.I.) and E. S. Hatakeyama); 09/01/08–05/31/09; 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; role: Principal Investigator.

### **II. Pending Research Support**

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; 4/15/09–4/14/10; 2 investigators (R. D. Noble (PI) and D. L. Gin); DLG's share: N/A; role: Co-Principal Investigator.

National Science Foundation (CBET (CBS Division)); "Study and Development of a New Type of Water Nanofiltration Membrane with an Ordered, Sub-one-nanometer Size Pore

System"; \$280,000 total costs; 04/01/09–03/31/12; 2 investigators (D. L. Gin (PI) and R. D. Noble); role: Principal Investigator.

U.S. Department of Energy (Energy Frontiers Research Center (EFRC) program); "Evolutionary Catalysis Energy Frontiers Research Center (EvoC EFRC); "\$15,895,234 total costs; 06/1/09–05/31/14; 11 investigators (A. Weimer (PI)); DLG's share: ~\$500,000; role: co-Principal Investigator

U.S. Department of Energy (Energy Frontiers Research Center (EFRC) program); "Center for Advanced Separations for Energy (CASE): Fundamentals of Separations for Energy Applications"; "\$25,000,000 total costs; 08/01/09–07/31/14; 17 investigators (J. F. Brennecke (PI)); DLG's share: \$1,035,000; role: co-Principal Investigator.

### **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 (P.I.), 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.

## *Teaching Accomplishments*

### I. Courses taught

#### (a) University of Colorado, Boulder

General Chemistry for Engineers (CHEM 1211), freshman undergraduate level (3 times)  
 Research Methods and Ethics (CHEN 5838 and CHEN 5333), graduate level (2 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 (5 times)  
 Polymer Chemistry for Engineers (CHEN 4450/5450), undergraduate/graduate (1 time)

#### Teaching statistics:

<b>Course</b>	<b>Term</b>	<b>Enrollment</b>	<b>Instructor Rating</b>	<b>Course Rating</b>
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
CHEN 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
CHEN 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 3311-100	Fall 2008	212	4.2/6.0	4.0/6.0
CHEM 1211	Spr. 2009	175	pending	pending

**(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**

<b>Course</b>	<b>Times Taught</b>	<b>Average Enrollment</b>	<b>Avg. Instr. Rating</b>
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 (MC<sup>2</sup>) 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)	Vvi Bright, Inc., Boulder, CO
Meijuan Zhou	2001–2006 (ChBE) (Ph.D., Dec. 2006)	Membr. Tech. Res., Menlo Park, CA
Cory Pecinovsky	2002–2007 (Chem) (Ph.D., Dec. 2007)	Displaytech, Longmont, CO
Xiaoyun Lu	2002–2007 (ChBE) (Ph.D., Dec. 2007)	Amgen, Longmont, CO
Nick Cain	2002–2004 (ChBE) (M.S., May 2004)	Qimonda, VA
Jason Bara	2002–2007 (ChBE) (Ph.D., May 2007)	(co-advised with R. D. Noble) Sr Res. Assoc., ChBE, CU Boulder; & CTO, ION Engineering, Boulder, CO
Kortney Klinkel	2003–2007 (Chem) (Ph.D., May 2007)	(co-advised with J. Hagadorn) Patent reviewer, US PTO
Parag Nemade	2004–2007 (ChBE)	(co-advised with R. H. Davis)

	(Ph.D., Dec. 2008)	Pfizer, NJ
Rob Kerr	2005–present (Chem)	
Jacquie Richardson	2005–2006 (Chem)	Grad student, Walba group, CU
Evan Hatakeyama	2006–present (ChBE)	(co-advised with R. D. Noble)
Trevor Carlisle	2007–present (ChBE)	(co-advised with R. D. Noble)
Bret Voss	2007–present (ChBE)	(co-advised with R. D. Noble)
Brian Wiesenauer	2008–present (Chem)	
Maggie Reynolds	2008–present (Chem)	
Erin Fortin	2009–present (Chem)	

**(ii) Undergraduate Students**

<i>Name</i>	<i>Dates</i>	<i>Present Position</i>
Ray Park	2002	
Garret Nicodemus	Summer 2004 (ChBE)	Grad student, CU Boulder (ChBE)
John Cipolla	2004–2005 (ChBE)	
Lauren Kiemele	2004–2006 (Chem) (joint with J. Hagadorn)	Research Assistant, UCHSC
Alice Kaminski	2005–2006 (ChBE) (joint with R. Noble)	BP (Alaska)
Eric Karp	2005–2007 (ChBE) (joint with D. K. Schwartz)	
Sonja Lessmann	2006–2007 (Chem)	
Jenny Lohr	2007–2008 (ChBE)	
Erin Fortin	2008 (Chem)	Grad student, CU Boulder (Chem)

**(iii) Postdoctoral Associates**

<i>Name</i>	<i>Dates</i>	<i>Present Position</i>
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Tim Kidd	2001–2003	DSM Research (The Netherlands)
Jizhu Jin	2002–2005	Chemical Abstracts Service, OH
J. Shailaja	2002–2005	Sirtis Pharmaceuticals, MA
Wonewoo Seo	2004–2006	Univ. of Nevada, Reno (2 <sup>nd</sup> postdoc)
Xiaohui Zeng	2004–2006	Chemical Abstracts Service, OH
Chris Gabriel	2006–present	
Jason Bara Boulder; &	2007–present	Sr Res. Assoc., ChBE, CU CTO, ION Engineering, Boulder, CO
Andy LaFrate	2008–present	
Yeny Hudiono	2008–present	

**(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)	Assoc. Professor, De Anza College
Ryan Smith	1994–1999 (Ph.D., Dec. 1999)	Illumina, San Deigo, CA.
Benjamin Hoag	1994–2000 (Ph.D., May 2000)	Glyptal, Chelsea, MA
Brian Baxter	1994–2000 (Ph.D., Dec. 2000)	Senior Scientist, Parallel Synth Technologies, CA
Jeff Gruneich	1996–1997 (M.S., Dec. 1997)	Graduate student, U. of Penn.
Esther Kim	1996–1998 (M.S., Dec. 1998)	George Washington Law School
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	Law school, Santa Clara College
Robert Chen	1996–1997	Graduate student, Stanford
Jerry Yu	1997-1998	Zeneca
Orion Jankowski	1998–1999	Graduate student, Stanford
Ben Gross	1997–1999	Graduate student, Princeton
Juston Smithers	1998–1999	Cleaire, CA
Scott Hammond	1999–2001	Postdoc, Univ. of WA
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	Eeonyx Corp., Pinole, CA
Hai Deng	1997–1998	Intel, Sunnyvale, CA
Mary Reppy	1997–1999	ABS, Inc., Wilmington, DE
Julia Ding	1998–1999	Waters Corporation, Tanton, MA
Seth Miller	1998–2000	Zettacore, Inc., Englewood, CO
Wen-Jing Zhou TX	1999–2001	DuPont Powder Coatings, Houston
Weiqliang Gu	2000–2002	Waters Corporation, Tanton, MA

## *Service Activities*

### **I. Professional Service**

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

Regular reviewer of manuscripts for the 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, Organic Letters, Chemical Communications, Biomacromolecules, Accounts of Chemical Research, Journal of Membrane Science, Journal of Physical Chemistry.

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 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, Aug. 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 symposium on "Polymer Chemistry in Nanotechnology" 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 “Robert H. Grubbs Nobel Prize Symposium and Celebration at Caltech,” Pasadena, CA, July 21–22, 2006.

Co-organizer and session chair for the symposium on “Polymers and Liquid Crystals” 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.

## II. Department/University Service

### (a) University of Colorado, Boulder

Co-chair, Chem. & Biol. Engineering Tenure and Promotion Committee	2008–present
Member, Chem. & Biol. Engineering Faculty/Staff Awards Committee	2008–present
Member, Chem. & Biol. Engineering Graduate Committee	2008–present
Member, Chemistry & Biochemistry Nanoscience Fac. Search Committee	2008–present
Former Chair; Member, College of Eng. Matls Faculty Search Committee	2008
Member, Chemistry & Biochemistry Materials Faculty Search Committee	2007–2008
Member, Committee on University Discoveries	2006–present

Member, Chemistry & Biochemistry Graduate Admissions Committee	2002–present
Member, Chem. & Biol. Engineering Graduate Committee	2002–2007
Chair, Chemistry & Biochemistry Graduate Admissions Committee	2002–2005
ChBE representative to the College of Engineering's Nano/Micro Characterization Facility	2003–2006
Undergrad Materials Option Co-advisor, Chemical Engineering	2003–present
Space Committee Chair, Chem. & Biol. Engineering	2004–2006
Member, Chemistry Dept. Executive Committee	2005–2006
Seminar co-chair, ChBE Dept.	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
Department of Chemistry Curriculum Committee	1997–1998
Department of Chemistry Teaching Awards Committee	1997–1998

**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 (2 times)	2006, 2007
Materials Science from CU demonstration helper	2006