

Refereed Publications:

1. P. K. Bhowmik and T. C. K. Su. Trajectory Calculations of Ion-Quadrupolar Molecule Collision Rate Constants. *J. Chem. Phys.* **1986**, *84*, 1432-1434.
2. D. W. Boerth and P. K. Bhowmik. Protonation-Deprotonation of Purines and Purine Nucleosides. *J. Mol. Struct. (Theochem.)* **1989**, *183*, 381-392.
3. D. W. Boerth and P. K. Bhowmik. Purine Nucleotide Cations. 2. Energetics and Conformational Effects on Protonation-Deprotonations of Purine Nucleoside. *J. Phys. Chem.* **1989**, *93*, 3327-3334.
4. H. C. Bei, P. K. Bhowmik, and T. C. K. Su. Trajectory Calculations of High Temperature and Kinetic Energy Dependent Ion-Polar Molecule Collision Rate Constants. *J. Chem. Phys.* **1989**, *90*, 7046-7049.
5. P. K. Bhowmik and T. C. K. Su. Parametrization of the Trajectory Calculations on Ion-Quadrupolar Molecule Collision Rate Constants. *J. Chem. Phys.* **1991**, *94*, 6444-6445.
6. P. K. Bhowmik, R. O. Garay, and R. W. Lenz. Thermotropic polyesters with flexible spacers in the main chain and oligo(oxyethylene) substituents. *Makromol. Chem.* **1991**, *192*, 415-425.
7. R. W. Lenz, A. Furukawa, P. K. Bhowmik, R. O. Garay, and J. Majnusz. Synthesis and characterization of extended rod thermotropic polyesters with polyoxyethylene pendant substituents. *Polymer* **1991**, *32*, 1703-1712.
8. P. K. Bhowmik, E. D. T. Atkins, and R. W. Lenz. Crystalline and Liquid Crystalline Properties of Polyesters of Phenyl-Substituted 4,4'-Biphenol. 1. Polymers from Terephthalic Acid and 2,6-Naphthalenedicarboxylic Acid. *Macromolecules* **1993**, *26*, 440-446.
9. P. K. Bhowmik, E. D. T. Atkins, and R. W. Lenz. Crystalline and Liquid Crystalline Properties of Polyesters of Phenyl-Substituted 4,4'-Biphenol. 2. Polymers with 4-Hydroxybenzoic Acid. *Macromolecules* **1993**, *26*, 447-451.
10. R. O. Garay, P. K. Bhowmik, and R. W. Lenz. Thermotropic Polyesters of a Series of Aromatic Diols with Phenylterephthalic Acid and 4,4'-Oxybisbenzoic Acid. *J. Polym. Sci. Part A: Polym. Chem.* **1993**, *31*, 1001-1006.
11. P. K. Bhowmik and R. W. Lenz. Fully Aromatic Thermotropic Liquid Crystalline Polyesters of Substituted 4,4'

13. P. K. Bhowmik and H. Han. Fully Aromatic Liquid Crystalline Polyesters of Phenyl-Substituted 4,4'-Biphenols and 1,1'-Binaphthyl-4,4'-Diol with either 2-Bromoterephthalic Acid or 2-Phenylterephthalic Acid. *Macromolecules* **1993**, 26, 5287-5294.

14. U. Dutta, P. K. Bhowmik, and A. Memon. An Overview of Tire Based Asphalt Pavement (TBAP) Mix Technology.

37. P. K. Bhowmik, X. Wang, and H. Han. Main-Chain, Thermotropic, Liquid-Crystalline Hydrogen-Bonded Polymers of 4,4'-Bipyridyl with Aliphatic Dicarboxylic Acids. *J. Polym. Sci. Part A: Polym. Chem.* **2003**, *41*, 1282-1295.
38. P. K. Bhowmik, H. Han, J. J. Cebe, R. A. Burchett, B. Acharya, and S. Kumar. Ambient-temperature thermotropic liquid-crystalline viologen bis(triflimide) salts. *Liquid Crystals* **2003**, *30*, 1433-1440.
39. P. K. Bhowmik, H. Han, J. J. Cebe, I. K. Nedeltchev, S.-W. Kang, and S. Kumar. Synthesis and Characterization of Poly(pyridinium salt)s with Organic Counterions Exhibiting Both Thermotropic Liquid-Crystalline and Light-Emitting Properties. *Macromolecules* **2004**, *37*, 2688-2694.
40. P. K. Bhowmik, H. Han, I. K. Nedeltchev, and J. J. Cebe. Room-Temperature Thermotropic Ionic Liquid Crystals: Viologen Bis(triflimide) Salts. *Molecular Crystals and Liquid Crystals* **2004**, *419*, 27-46.
41. P. K. Bhowmik, H. Han, and A. K. Nedeltchev. Synthesis and Characterization of Poly(pyridinium salt)s with Organic Counterions Exhibiting Both Thermotropic Liquid-Crystalline and Light-Emitting Properties. *J. Polym. Sci. Part A: Polym. Chem.* **2006**, *44*, 1028-1041.
42. H. Han, P. R. Vantine, A. K. Nedeltchev, and P. K. Bhowmik. Main-Chain Ionene Polymers Based on *trans*-1,2-Bis(4-pyridyl)ethylene Exhibiting Both Thermotropic Liquid-Crystalline and Light-Emitting Properties. *J. Polym. Sci. Part A: Polym. Chem.* **2006**, *44*, 1541-1554.
43. P. K. Bhowmik, H. Han, I. K. Nedeltchev, J. J. Cebe, S.-W. Kang, and S. Kumar. Synthesis and characterization of ionic liquids: viologen bis{tetrakis[3,5-bis(trifluoromethyl)phenyl]borate} salts. *Liquid Crystals* **2006**, *33*, 891-906.
44. M. A. Cheney, N. R. Birkner, L. Ma, T. Hartmann, P. K. Bhowmik, V. F. Hodge, and S. M. Steinberg. Synthesis and characterization of inorganic double helices of cryptomelane nanomaterials. *Colloids and Surfaces A: Physicochem. Eng. Aspects* **2006**, *289*, 185-192.
45. A. Biswas, R. L. Shogren, D. G. Stevenson, J. L. Willett, and P. K. Bhowmik. Ionic liquids as solvents for biopolymers: Acylation of starch and zein protein. *Carbohydrate Polymers* **2006**, *66*, 546-550.
46. P. K. Bhowmik, H. Han, and A. K. Nedeltchev. Synthesis and characterization of poly(pyridinium salt)s with anthracene moieties exhibiting both lyotropic liquid-crystalline and UV light-emitting properties. *Polymer* **2006**, *47*, 8281-8288.
47. P. K. Bhowmik, X. Wang, and H. Han. Main chain, thermotropic, liquid crystalline, hydrogen-bonded of 4,4'-bipyridyl with 4,4'-dicarboxy- α,ω -diphenoxyalkanes. *Liq. Cryst.* **2007**, *34*, 841-854.

48. P. K. Bhowmik, A. K. Nedeltchev, and H. Han. Synthesis, optical, and thermal properties of conjugated, bispyridyl and tetrapyridyl compounds by Knoevenagel reaction. *Tetrahedron Letters* **2007**, *48*, 5383-5387.
49. M. A. Cheney, P. K. Bhowmik, S. Moriuchi, N. C. Birkner, V. F. Hodge, and S. E. Elkouz. Synthesis and characterization of two phases of manganese oxide from decomposition of permanganate in concentrated sulfuric acid at ambient temperature. *Colloids and Surfaces A: Physicochem. Eng. Aspects* **2007**, *307*, 62-70.
50. P. K. Bhowmik, S. Kamatam, H. Han, and Alexi K. Nedeltchev. Synthesis and characterization of poly(pyridinium salt)s with oxyalkylene units exhibiting amphotropic liquid-crystalline and photoluminescence properties. *Polymer* **2008**, *49*, 1748-1760.
51. Marcos A. Cheney, Pradip K. Bhowmik, Shingo Moriuchi, Mario Villalobos, Shizhi Qian, and Sang W. Joo. The effect of stirring on the morphology of birnessite nanoparticles. *Journal of Nanomaterials* **2008**, article ID 168716, 9 pages.
52. P. K. Bhowmik, A. K. Nedeltchev, and H. Han. Synthesis, thermal and lyotropic liquid-crystalline properties of protic ionic salts. *Liquid Crystals* **2008**, *35*, 757-764.
53. L. Ma, T. Hartmann, M. A. Cheney, N. R. Birkner, and P. K. Bhowmik. Characterization of an Inorganic Cryptomelane Nanomaterial Synthesized by a Novel Process Using Transmission Electron Microscopy, Electron Spectroscopy, and X-ray Diffraction. *Microscopy and Microanalysis* **2008**, *14*, 328-334.
54. M. M. Alam, M. Mushfiq, H. Han, P. K. Bhowmik, and K. Goswami. Design and Synthesis of n-Type Organic-Inorganic Hybrid Material Incorporating CdSe Quantum Dots Nanocrystal Core and Diphenylquinoline Peripheral Group. *Macromolecules* **2008**, *41*, 7790-7793.
55. M. A. Cheney, P. K. Bhowmik, S. Qian, S. W. Joo, W. Hou, and J. M. Okoh. A new Method of Synthesizing Black Birenessite Nanoparticles: From Brown to Black Birenessite with Nanostructures. *Journal of Nanomaterials* **2008**, Volume 2008 Article ID 763706, 8 pages.
56. P. K. Bhowmik, A. K. Nedeltchev, and H. Han. Synthesis, Thermal and Light-Emitting Properties of Anthracene Derivatives. *Molecular Crystals and Liquid Crystals* **2009**, *501*, 125-137.
57. P. K. Bhowmik, M. A. Cheney, R. Jose, H. Han, A. Banerjee, L. Ma, and L. D. Hansen. Isothermal titration calorimetry, transmission electron microscopy, and field emission scanning electron microscopy of a main-chain viologen polymer containing bromide as counterions. *Polymer* **2009**, *50*, 2393-2401.
58. M. A. Cheney, R. Jose, A. Banerjee, P. K. Bhowmik, S. Qian, and J. M. Okoh. Synthesis and Characterization of Birenessite and Cryptomelane Nanostructures in Pr

59.

71. T. S. Jo, H. Han, P. K. Bhowmik, and L. Ma. Dispersion of single-walled carbon nanotubes with poly(pyridinium salt)s containing various rigid aromatic moieties. *Macromol. Chem. Phys.* **2012**, *213*, 1378-1384.

72. T. S. Jo, J. J. Koh, H. Han, and P. K. Bhowmik. Solution, thermal and optical properties of

81. J. J. Koh, C. I. Lee, M. A. Ciulei, H. Han, P. K. Bhowmik, Vladimir Kartazaev, and S. K. Gayen. Synthesis, Optical Spectroscopy and Laser Potential of Pyrylium Tosylates. *J. Mol. Struct.* **2018**, *1171*, 458-465.

82. Connor R. Rigby, Haesook Han, Pradip K. Bhowmik, Meisam Bahari, Anthony Chang, John N. Harb, Randy S. Lewis, and Gerald D. Watt. Soluble Viologen Polymers as Carbohydrate Oxidation Catalysts for Alkaline Carbohydrate Fuel Cells. *J. Electroanalytical Chem.* **2018**, *823*, 416-421.

83 Samundeeswari M. Balasekaran, Jung J. Koh, Haesook Han, Pradip K. Bhowmik, Bruce Noll, and Frederic Poineau. Di(1,2,4,6-tetraphenylpyridinium) Octachlorodirhenate(III). *Crystallography Reports* **2018**, *63*, 570-573.

84. N. Johns, S. Mariappan Balasekaran, A. Chang, P. K. Bhowmik and F. Poineau

Preparation and Molecular Structure of Lanthanum–FcCOO⁻ í ' 7 % E H §@ parOO

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91. Pradip K. Bhowmik, Omar Noori, Si L. Chen, Haesook Han, Michael R. Fisch, Christina M. Robb, Aaron Variyam, and Alfonso Martinez-Felipe. Ionic liquid crystals: synthesis and characterization via NMR, DSC, POM, X-ray diffraction and ionic conductivity of asymmetric viologen bistriflimide salts. *J. Mol. Liq.* **2021**, 328, 115370.
92. Pradip K. Bhowmik, Tae. S. Jo, Jung. J. Koh, Jongwon Park, Bidyut. Biswas, Ronald C. G. Principe, Haesook. Han, András F. Wacha and Matti Knaapila. Poly(pyridinium salt)s Containing 2,7-Diamino- 9,9'-dioctylfluorene Moieties with Various Organic Counterions Exhibiting Both Lyotropic Liquid-Crystalline and Light-Emitting Properties. *Molecules* **2021**, 26, 1560.
93. Pradip K. Bhowmik. Special Issue Editorial: Current Advances in Liquid Crystals. *Molecules* **2021**, 26, 3713.
94. Pradip K. Bhowmik, Jung J. Koh, David King, Haesook Han, Benoît Heinrich, Bertrand Donnio, Daniel Zaton and Alfonso Martinez-Felipe. Dicationic stilbazolium salts: structural, thermal, optical, and ionic conduction properties. *J. Mol. Liq.* **2021**, 341, 117311.
95. Walter F. Paxton, Preston Humphries, Dallin Scott, Haesook Han and Pradip K. Bhowmik. Electrocatalytic Oxidation of Carbohydrates via Surface-Immobilized Viologen. *J. Electrochem. Soc.* **2021**, 168, 104516.

Books Editors:

1. Guest Editor, Challenges and Advances in Chemical Science Vol. 8, Book Publisher International: London, UK, ISBN: 978-93-5547-065-2 (Print), 978-93-5547-353-0 (eBook), February 7, 2022.
2. Guest Editor, New Innovations in Chemistry and Biochemistry Vol. 6, Book Publisher International: London, UK, ISBN: 978-93-5547-091-1 (Print), 978-93-5547-143-7 (eBook), December 31, 2021.
3. Guest Editor, New Innovations in Chemistry and Biochemistry Vol. 3, Book Publisher International: London, UK, ISBN: 978-93-5547-039-3 (Print), 978-93-5547-040-9 (eBook), September 25, 2021.
4. Guest Editor, Challenges and Advances in Chemical Science Vol. 4, Book Publisher International: London, UK, ISBN: 978-93-91473-10-5 (Print), 978-93-91473-18-1 (eBook), August 07, 2021.
5. Guest Editor, Current Advances in Chemistry and Biochemistry Vol. 10, Book Publisher International: London, UK, ISBN: 978-93-91473-69-3 (Print), 978-93-91473-70-9 (eBook), July 23, 2021.
6. Guest Editor, Current Perspectives on Chemical Sciences Vol. 10, Book Publisher International: London, UK, ISBN: 978-93-90888-43-6 (Print), 978-93-90888-51-1 (eBook), May 19, 2021.
7. Editor, Current Advances in Chemistry and Biochemistry Vol. 3, Book Publisher International: London, UK, ISBN: 978-93-90768-93-6 (Print), 978-93-90768-91-2 (eBook), March 04, 2021.
8. Editor, Theory and Applications in Chemistry Vol. 4, Book Publisher International: London, UK, ISBN: 978-93-89816-28-0 (Print), 978-93-89816-29-7 (eBook), March 7, 2020.

Book Chapter:

Pradip K. Bhowmik, Anthony Chang, Jongin Kim, Erenz J. Dizon, Ronald Carlo G. Principe and Haesook Han. Thermotropic Liquid-Crystalline Properties of Viologens Containing 4-n-alkylbenzenesulfonates. In *Ionic Liquid Crystals*; G. Saielli, Ed.; MDPI: Switzerland, 2019; pp12-24. Reprinted from: *Crystals* **2019**, *9*, 77, doi:10.3390/cryst9020077.

Encyclopedia Chapters:

1. P. K. Bhowmik, H. Han, and R. A. Basheer. Liquid Crystalline Polymers (Viologen: Thermotropic and Lyotropic). In *Polymeric Materials Encyclopedia*; Salamone, J. C., Ed.; CRC: Boca Raton, 1996; Vol. 5, 3741-3748.

2. P. K. Bhowmik and H. Han. Liquid Crystalline Polymers (Wholly Aromatic Polyesters). In Polymeric Materials Encyclopedia; Salamone, J. C., Ed.; CRC: Boca Raton, 1996; Vol. 5, 3748-3753.

Patents:

1. P. K. Bhowmik, B. L. Spangelo, V. Vo, H. Han and O. Tanthmanatham. Pt(IV) Complexes & R Q W D L-Quinoline-2,3-dithiolate-bipyridyl and Their Use in Cancer Therapy. U.S. Patent 10, 316, 050 B2, 2019.
2. P. K. Bhowmik, K. Goswami M. M. Alam and H. Han. Fire Retardant Materials and Devices Including Same. US Patent 10, 240, 090 B2, 2019.
3. P. K. Bhowmik, K. Goswami M. M. Alam and H. Han. Fire Retardant Materials and Devices Including Same. EP Patent 3, 186, 308 B1, 2018.
4. P. K. Bhowmik, M. M. Alam, K. Goswami and H. Han. Fire Retardant Materials and Devices Including Same. US Patent 9, 334, 373 B2, 2016.
5. B. L. Spangelo, V. Vo, P. K. Bhowmik, O. Tanthmanatham and H. Han. Synthetic Procedure and Cancer Treatment with Cisplatin Derivatives. US Patent 8,703,756 B2, 2014.

6. P. K. Bhowmik and H. Han Fully Aromatic Thermotropic Liquid Crystalline Polyesters of 1,1'-Binaphthyl

16. H. Han and P. K. Bhowmik. Lyotropic Liquid Crystalline Main-Chain Viologen Polymers of 4,4'-Bipyridyl with Ditosylates of 1,7-Heptanediol, 1,8-Octanediol, and 1,9-Nonanediol. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **1995**, 36(2), 330-331.

17. H. Han, A. H. Molla, and P. K. Bhowmik. Hydrogen-Bonded Main-Chain Liquid Crystalline Polymers of Trans-1,2-Bis(4-pyridyl)ethylene with Aliphatic Dicarboxylic Acids. *Polym. Prepr., Am. Chem. Soc.* c72 (-4 ()TJ0 Td()T7T1 1 (ol)-2 (y)4 (Td94 (pr) (. Td()T7

26. P. K. Bhowmik, P. R. Vantine, A. K. Nedeltchev, and H. Han. Main-Chain Thermotropic Liquid-Crystalline Ionene Polymers Based on 1,2-Bis(4-pyridyl)ethane. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2005**, *46(1)*, 676-677.
27. H. Han, P. R. Vantine, A. K. Nedeltchev, and P. K. Bhowmik. Main-Chain Thermotropic Liquid-Crystalline Ionene Polymers Based on Trans-1,2-bis(4-pyridyl)ethylene. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2005**, *46(1)*, 678-679.
28. P. R. Vantine, H. Han, A. K. Nedeltchev, and P. K. Bhowmik. Main-Chain Viologen Polymers with Organic Counterions Exhibiting Thermotropic Liquid-Crystalline Properties. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2005**, *46(1)*, 680-681.
29. A. K. Nedeltchev, H. Han, and P. K. Bhowmik. Synthesis and Characterization of Anthracene Polymer with Lawesson's Reagent. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2005**, *46(1)*, 791-792.
30. P. K. Bhowmik, H. Han, A. K. Nedeltchev, and Z. Wang. Synthesis and Characterization Poly(pyridinium salt)s with Organic Counterions Exhibiting Thermotropic Liquid-Crystalline Properties. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2005**, *46(1)*, 799-800.
31. A. Biswas, R. L. Shogren, David. G. Stevenson, J. L. Willett, and P. K. Bhowmik. Ionic Liquids as Solvents for Biopolymers: Acylation of Starch and Zein Protein. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2005**, *46(2)*, 924-925.
32. P. K. Bhowmik, M. A. Cheney, H. Han, and L. Ma. Isothermal Titration Calorimetric and Transmission Electron Microscopy of Main-Chain Viologen Polymer Containing Bromide as Counterions. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2006**, *47(2)*, 334-335.
33. H. D. Mandal, P. K. Bhowmik, H. Han, A. K. Nedeltchev, J. A. Jimenez-Hernandez, and P. M. McGannon. Poly(pyridinium salt)s with Organic Counterions Derived from Aromatic Diamine Containing Tetraethyleneoxy Unit Exhibiting Thermotropic Liquid-Crystalline and Photoluminescence Properties. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2009**, *50(1)*, 252-253.
34. H. D. Mandal, P. K. Bhowmik, H. Han, and A. K. Nedeltchev. Poly(pyridinium salt)s Derived from α,ω -Diaminoalkanes: Thermotropic Liquid-Crystalline and Photoluminescence Properties. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2009**, *50(1)*, 250-251.
35. T. S. Jo, A. K. Nedeltchev, B. Biswas, H. Han, and P. K. Bhowmik. Solution and Optical Properties of Poly(pyridinium salt)s Derived from Various Aromatic Diamines. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2011**, *52(1)*, 115-116.

36. T. S. Jo, H. Han, L. Ma, and P. K. Bhowmik. High-Concentration Dispersions of Single-Walled Carbon Nanotubes with Poly(pyridinium salt)s. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2011**, 52(1), 305-306.
37. T. S. Jo, J. Koh, H. Han, P. K. Bhowmik, and L. Ma. Dispersions of Single-Walled Carbon Nanotubes with Rigid-Rod Poly(pyridinium salt)s. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2011**, 52(2), 250-251.
38. T. S. Jo, O. Tanthmanatham, J.-W. Lin, H. Han, and P. K. Bhowmik. Luminescent Dicationic Liquid Crystals Based on Stilbazolium Moieties. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2011**, 52(2), 276-277.
39. T. S. Jo, W. L. McCurdy, O. Tanthmanatham, T. K. Kim, H. Han, and P. K. Bhowmik. Luminescent Tricationic Liquid Crystals Based on Stilbazolium Moieties. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2011**, 52(2), 278-279.
40. T. S. Jo, J. Koh, H. Han, and P. K. Bhowmik. Synthesis and Characterization of Water-Soluble Poly(pyridinium salt)s Derived from Aromatic Diamines. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2011**, 52(2), 351-352.
41. T. S. Jo, J. K. Wray, O. Tanthmanatham, H. Han, and P. K. Bhowmik. Thermotropic Hexacationic Liquid Crystals Based on Tripodal Viologen Salts. *Polym. Prepr., Am. Chem. Soc. Div. Polym. Chem.* **2011**, 52(2), 387-388.
42. M. M. Alam, U. Sampathkumaran, K. Goswami, and P. K. Bhowmik. Durable and Nonflammable Crew Clothing Utilizing Phosphorous-based Fire-Retardant Materials. ICES-2014-043, 2327-2341, 44th International Conference on Environmental Systems, 13-17 July 2014, Tucson, Arizona.