

## Mark N. Kobrak

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### Education:

- **University of Chicago** Ph.D., Physical Chemistry (1997)  
Thesis: "Aspects of Selective Photochemistry"  
Advisor: Stuart A. Rice
- **Northwestern University** B.A., Chemistry and Integrated Science, with Honors (1992)

### Professional Experience:

- Sep 2013 - present: **Brooklyn College of the City University of New York** Professor of Chemistry
- Feb 2017 - Jun 2017: **University of Groningen** Visiting Faculty Member
- Jan 2006 - Sep 2013: **Brooklyn College of the City University of New York** Associate Professor of Chemistry
- Sep 2009 - Jun 2011: **Brooklyn College of the City University of New York** Chair, Department of Chemistry
- Sep 2001-Jan 2006: **Brooklyn College of the City University of New York** Assistant Professor of Chemistry
- Jan 2000-Aug 2001: **The University of Notre Dame** and **The Pennsylvania State University** Post-doctoral fellow with Sharon Hammes-Schiffer, Department of Chemistry
- 1998-Jan 2000: **The University of Houston** Post-doctoral fellow with Eric R. Bittner, Department of Chemistry
- 1992-1998: **The University of Chicago** Graduate student with Stuart A. Rice, Department of Chemistry

### Publications:

- *Nanoscale viscosity of confined polyethylene oxide*, Z. Zhang, J. Ding, B. M. Ocko, A. Fluerasu, L. Wiegart, Y. Zhang, M. Kobrak, Y. Tian, H. Zhang, J. Lhermitte, C.-H. Choi, F. T. Fisher, K. G. Yager, and C. T. Black, *Phys. Rev. E* **100** 062503 (2019).
- *System and method for extracting ions without utilizing ion exchange*, M. N. Kobrak and F. Picchioni, Patent No WO2019152774, (2019).
- *Extraction of Acids and Bases from Aqueous Phase to a Pseudoprotic Ionic Liquid*, N. Patsos, K. Lewis, F. Picchioni, and M. N. Kobrak, *Molecules* **24** 894-904 (2019); *invited contribution to special issue, "Ionic Liquids in Chemical Separations: Promise and Prospects"*.
- *X-Ray Scattering and Physicochemical Studies of Trialkylamine/Carboxylic Acid Mixtures: Nanoscale Structure in Pseudoprotic Ionic Liquids and Related Solutions*, M. N. Kobrak and K. G. Yager, *Phys. Chem. Chem. Phys.* **20** 18639-18646 (2018).
- *Laboratory Manual in General Chemistry, 4th ed.*, M.N. Kobrak, ed., Kendall-Hunt, Dubuque, IA 2017.

- *Copper Extraction Using Protic Ionic Liquids: Evidence of the Hofmeister Effect*, C.H.C. Janssen, N. A. Macias-Ruvalcaba, M. A. Aguilar-Martinez and M. N. KobraK, Sep. Pur. Tech. **168** 275-283 (2016).
- *Laboratory Manual: General Chemistry for the Health Professions*, M.N. KobraK, ed., Kendall-Hunt, Dubuque, IA 2016.
- *Metal Extraction to Ionic Liquids: The Relationship between Structure, Mechanism, and Application*, C.H.C. Janssen, N. A. Macias-Ruvalcaba, M. A. Aguilar-Martinez and M. N. KobraK, Int. Rev. in Phys. Chem. **34** 591-622 (2015).
- *Selective Extraction of Metal Ions from Aqueous Phase to Ionic Liquids: A Novel Thermodynamic Approach to Separations*, C.H.C. Janssen, A. Sanchez and M.N. KobraK, ChemPhysChem **15** 3536 (2014).
- *An Improved Model of the Grand Canonical Ensemble Description of an Electrolyte Confined in a Mesoscale Pore*, M.N. KobraK, ECS Transactions **58** 73 (2014).
- *Application of a Thermodynamic Model for Charged Interfaces to Lipid Membranes*, M.N. KobraK and K. Babatunde, ECS Transactions **61** 31 (2014).
- *A Proposed Voltage Dependence on the Ionic Strength of a Confined Electrolyte Based on a Grand Canonical Ensemble Model*, M.N. KobraK, J. Phys. Cond. Matt. **25** 095006 (2013).
- *A Novel Mechanism for the Extraction of Metals from Water to Ionic Liquids*, C.H.C. Janssen, A. Sanchez, G.-J. Witkamp and M.N. KobraK, ChemPhysChem **14** 3806 (2013).
- *Instantaneous Normal Mode Analysis of a Series of Model Molten Salts*, H. Li and M.N. KobraK, ChemPhysChem **13** 1934 (2012).
- *The Influence of Charge Distribution on Ion Diffusion in Molten Salts*, H. Li and M.N. KobraK, ECS Transactions **41** 13 (2012).
- *Laboratory Manual in General Chemistry, 3rd ed.*, M.N. KobraK, ed., Kendall-Hunt, Dubuque, IA 2012.
- *Notes on the Application of the Kornyshev Model for Capacitance in Ionic Liquids*, M.N. KobraK, ECS Transactions **33** 411 (2010).
- *Electrostatic Interactions in Ionic Liquids: The Dangers of Dipole and Dielectric Descriptions*, M.N. KobraK and H. Li, Phys. Chem. Chem. Phys. **12** 1922 (2010).
- *Laboratory Manual in General Chemistry, 2nd ed.*, M.N. KobraK, ed., Kendall-Hunt, Dubuque, IA 2010.
- *A Molecular Dynamics Study of the Influence of Ionic Charge Distribution on the Dynamics of a Molten Salt*, H. Li and M. N. KobraK, J. Chem. Phys. **131** 194507 (2009).
- *Coupled Ion Complexation and Exchange between Aqueous and Ionic Liquid Phases: A Thermodynamic Interpretation*, M.N. KobraK, Solv. Extr. Ion. Exch. **26** 735 (2008).
- *The Relationship between Ionic Structure and Viscosity in Room-Temperature Ionic Liquids*, H. Li, M. Ibrahim, I. Agberemi and M.N. KobraK, J. Chem. Phys. **129** 124507 (2008).
- *Laboratory Manual in General Chemistry*, M.N. KobraK, ed., Kendall-Hunt, Dubuque, IA 2008.
- *The Chemical Environment of Ionic Liquids: Links Between Liquid Structure, Dynamics and Solvation*, M.N. KobraK, Adv. Chem. Phys. **139** 85 (2008).
- *The Relationship Between Solvent Polarity and Molar Volume in Room-Temperature Ionic Liquids* M.N. KobraK, Green Chem. **9** 80 (2008).

- *A Comparative Study of Solvation Dynamics in Room Temperature Ionic Liquids*, M.N. KobraK, J. Chem. Phys. **127** 184507 (2007).
- *Electrostatic Interactions of a Neutral Dipolar Solute with a Fused Salt: A New Model for Solvation in Ionic Liquids* M.N. KobraK, J. Phys. Chem. B **111** 4755 (2007).
- *Lewis Structure Representation of Free Radicals Similar to ClO*, W. Hirsch and M. KobraK, J. Chem. Ed. **84** 1360 (2007).
- *SmartTutor: A Unified Approach for Enhancing Science Education*, K. Harrow, R. Eckhardt, D. Kopec, M. KobraK and P. Whitlock, J. Comp. Sci. in Coll. **22** 29 (2007).
- *Characterization of the Solvation Dynamics of a Room-Temperature Ionic Liquid via Molecular Dynamics Simulation*, M.N. KobraK, J. Chem. Phys., **125** 064502 (2006).
- *Understanding Organic Processes in Ionic Liquids: Achievements So Far and Challenges Remaining*, J. B. Harper and M.N. KobraK, Mini-Rev. in Org. Chem. **3** 253 (2006).
- *An Electrostatic Interpretation of Structure-Property Relationships in Ionic Liquids*, M.N. KobraK and N. Sandalow, in "Molten Salts XIV, R. Mantz, ed., The Electrochemical Society, Pennington, NJ, 2006.
- *Solvation Dynamics of Room-Temperature Ionic Liquids: Evidence for Collective Solvent Motion on Sub-Picosecond Timescales*, M.N. KobraK and V. Znamenskiy, Chem. Phys. Lett. **395** 127 (2004).
- *A Molecular Dynamics Study of Polarity in Room-Temperature Ionic Liquids*, V. Znamenskiy and M.N. KobraK, J. Phys. Chem. B **108** 1072 (2004).
- *Error Estimation in Histogram-Based Free Energy Calculations*, M.N. KobraK, J. Comp. Chem. **24** 1437 (2003).
- *Doppler Shift and Energy Transfer to a Solar Sail*, W. Hirsch and M.N. KobraK, Physics Ed. **37** 422 (2002).
- *Molecular Dynamics Simulation of Proton-Coupled Electron Transfer in Solution*, M.N. KobraK and S. Hammes-Schiffer, J. Phys. Chem. A **105** 10435 (2001).
- *Reaction Path Hamiltonian Analysis of Dynamical Solvent Effects for a Claisen Rearrangement and a Diels-Alder Reaction*, H. Hu, M.N. KobraK, C. Xu, and S. Hammes-Schiffer, J. Phys. Chem. A **104** 8058 (2000).
- *Quantum Simulations of Polaron Recombination Dynamics in Linear Polyenes*, E. R. Bittner and M. N. KobraK, Synth. Metals **121** 1635 (2001).
- *A Quantum Molecular Dynamics Study of Polaron Recombination in Conjugated Polymers*, M. N. KobraK and E. R. Bittner, Phys. Rev. B **62** 11473 (2000).
- *A Quantum Molecular Dynamics Study of Exciton Self-Trapping in Conjugated Polymers: Temperature Dependence and Spectroscopy*, M. N. KobraK and E. R. Bittner, J. Chem. Phys. **112** 7684 (2000).
- *A Dynamic Model for Exciton Self-Trapping in Conjugated Polymers I: Theory*, M. N. KobraK and E. R. Bittner J. Chem. Phys. **112** 5399 (2000).
- *A Dynamic Model for Exciton Self-Trapping in Conjugated Polymers II: Implementation*, M. N. KobraK and E. R. Bittner J. Chem. Phys. **112** 5410 (2000).
- *The Equivalence of Photoselective Adiabatic Passage and the Strong Field Brumer-Shapiro Approach*, M.N. KobraK and S.A. Rice, J. Chem. Phys. **109** 1 (1998).
- *Selective Photochemistry via Adiabatic Passage: An Extension of StiRAP for Degenerate Final States*, M.N. KobraK and S.A. Rice, Phys. Rev. A **57** 2885 (1998).

- *Coherent Population Transfer via a Resonant Intermediate State: The Breakdown of Adiabatic Passage*, M.N. Kobrak and S.A. Rice, Phys. Rev. A **57** 1158 (1998).
- *The Influence of High-Frequency Modes on Two Pulse Spectroscopy*, M.N. Kobrak and S.A. Rice, J. Chem. Phys. **107** 4091 (1997).
- *The Influence of High-Frequency Modes on Ultrashort Pulse Absorption Initiated Processes*, M.N. Kobrak, E.M. Hiller, and S.A. Rice, J. Chem. Phys. **105** 9403 (1996).

**Awards:**

- Jacque E. Levy Professorship in Analytical Chemistry, 2019.
- Levy-Kosminksy Professor of Physical Chemistry, 2013-2015.
- Eric M. Steinberg Award for College Citizenship, 2011.
- PSC-CUNY Collaborative Research Grant (with Profs. Sanjoy Banerjee and Daniel Steingart of City College of New York), 2009-2011
- Petroleum Research Fund Type-G Grant (2005-2007)
- Department of Energy Faculty and Student Team Fellowship (2003, 2004)