Ryan BRADLEY Jadrich

The University of Texas at Austin

McKetta Department of Chemical Engineering, Austin, TX 78712-1589

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EDUCATION

Ph.D., Chemistry, 2009-2014

**University of Illinois at Urbana - Champaign**

Research: Statistical Mechanics of Soft Condensed Matter, Liquid State Theory, Glassy and Disordered Systems

Thesis: [Structure, Slow Dynamics, Kinetic Arrest, and Massively Reconfigurable Assembly in Colloidal Suspensions](https://www.ideals.illinois.edu/handle/2142/72919)

Advisor: [Kenneth S. Schweizer](https://www.matse.illinois.edu/directory/profile/kschweiz)

**B.S., Chemistry, Highest Honors, 2005-2009**

**Rochester Institute of Technology**

Focus: Theoretical and Physical Chemistry

Minor: Mathematics

PROFESSIONAL CERTIFICATION

**Data Science, 2015-2016**

**General Assembly of Austin, TX**

Course Material: Supervised and Unsupervised Machine Learning Techniques

Coding: SciKit-Learn, Numpy and Pandas Python Packages

Capstone Project: [Disaster detection via Twitter (Python Notebook on GitHub)](https://github.com/rjadrich/disaster_detection_via_twitter)

Instructor: [Kevin Safford](https://www.linkedin.com/in/kevinsafford)

PROFESSIONAL EXPERIENCE

Postdoctoral Fellow, 2014-Present

The University of Texas at Austin, McKetta Department of Chemical Engineering

Research: Computational Inverse Design and Optimization of Liquid and Solid State Statistical Mechanics Models

Advisor: [Thomas M. Truskett](http://www.truskettgroup.com/)

**Analytical Chemistry Cooperative Education with Rochester Institute of Technology, 2007-2008**

**Xerox Analytical Services**

Overview: Provided Technical Support to Various Divisions in Xerox both Local and Foreign

Responsibilities: Routine Chemical Measurements and Troubleshooting, Presenting and Communicating Findings

Techniques: X-Ray Fluorescence Spectroscopy, Inductively Coupled Optical Emission Spectroscopy,

Light Microscopy, Gas, Gel and Ion Chromatography

Supervisor: [Kevin Marcell](https://www.linkedin.com/pub/kevin-marcell/12/589/762)

PUBLICATIONS

(1) B. A. Lindquist, **R. B. Jadrich** and T. M. Truskett, (In Preparation); “Equilibrium Gels via a Macroscopic Bond Limitation”

(2) **R. B. Jadrich**, B. A. Lindquist, J. A. Bollinger and T. M. Truskett, *Molecular Physics*, Invited Article (In Press); “Consequences of Minimizing Pair Correlations in Fluids for Dynamics Thermodynamics and Structure” [[GitHub](https://github.com/rjadrich/peer_reviewed_publications/blob/master/publications/PREPRINT_Consequences_of_Minimizing_Pair_Correlations_in_Fluids_for_Dynamics_Thermodynamics_and_Structure.pdf)]

(3) B. A. Lindquist, **R. B. Jadrich** and T. M. Truskett, *Soft Matter (Communication)*, DOI: 10.1039/C5SM03068D (2016); “Assembly of Nothing: Equilibrium Fluids with Designed Structured Porosity” [[Journal](http://dx.doi.org/10.1039/C5SM03068D), [GitHub](https://github.com/rjadrich/peer_reviewed_publications/blob/master/publications/Assembly_of_Nothing_Equilibrium_Fluids_with_Designed_Structured_Porosity.pdf)]

(4) A. Singh, B. A. Lindquist, G. K. Ong, **R. B. Jadrich**, A. Singh, H. Ha, C. J. Ellison, T. M. Truskett and D. J. Milliron, *Angewandte Chemie* **54**, 14840–14844 (2015); “Linking Semiconductor Nanocrystals into Gel Networks through all Inorganic Bridges” [[Journal](http://dx.doi.org/10.1002/anie.201508641), [GitHub](https://github.com/rjadrich/peer_reviewed_publications/blob/master/publications/Linking_Semiconductor_Nanocrystals_into_Gel_Networks_through_all_Inorganic_Bridges.pdf)]

(5) **R. B. Jadrich**, J. A. Bollinger, B. A. Lindquist and T. M. Truskett, *Soft Matter* **11**, 9342-9354 (2015); “Equilibrium Cluster Fluids: Pair Interactions via Inverse Design” [[Journal](http://t.co/lrxJI9PMaV), [GitHub](https://github.com/rjadrich/peer_reviewed_publications/blob/master/publications/Equilibrium_Cluster_Fluids_Pair_Interactions_via_Inverse_Design.pdf)]

(6) **R. B. Jadrich**, J. A. Bollinger, K. P. Johnston and T. M. Truskett, *Physical Review E* **91**, 042312 (2015); “Origin and Detection of Microstructural Clustering in Fluids with Spatial-Range Competitive Interactions” [[Journal](http://dx.doi.org/10.1103/PhysRevE.91.042312), [GitHub](https://github.com/rjadrich/peer_reviewed_publications/blob/master/publications/Origin_and_Detection_of_Microstructural_Clustering_in_Fluids_with_Spatial-Range_Competitive_Interactions.pdf)]

(7) **R. B. Jadrich** and K. S. Schweizer, Physical Review Letters **113**, 208302 (2014); “Directing Colloidal Assembly and a Metal-Insulator Transition Using a Quench-Disordered Porous Rod Template” [[Journal](http://dx.doi.org/10.1103/PhysRevLett.113.208302), [GitHub](https://github.com/rjadrich/peer_reviewed_publications/blob/master/publications/Directing_Colloidal_Assembly_and_a_Metal-Insulator_Transition_Using_a_Quench-Disordered_Porous_Rod_Template.pdf)]

(8) **R. Jadrich** and K. S. Schweizer, Journal of Chemical Physics **139**, 054502 (2013); “Equilibrium Theory of the Hard Sphere Fluid and Glasses in the Metastable Regime up to Jamming. II. Structure and Application to Hopping Dynamics” [[Journal](http://dx.doi.org/10.1063/1.4816276), [GitHub](https://github.com/rjadrich/peer_reviewed_publications/blob/master/publications/Equilibrium_Theory_of_the_Hard_Sphere_Fluid_and_Glasses_in_the_Metastable_Regime_up_to_Jamming_II_Structure_and_Application_to_Hopping_Dynamics.pdf)]

(9) **R. Jadrich** and K. S. Schweizer, Journal of Chemical Physics **139**, 054501 (2013); “Equilibrium Theory of the Hard Sphere Fluid and Glasses in the Metastable Regime up to Jamming. I. Thermodynamics” [[Journal](http://dx.doi.org/10.1063/1.4816275), [GitHub](https://github.com/rjadrich/peer_reviewed_publications/blob/master/publications/Equilibrium_Theory_of_the_Hard_Sphere_Fluid_and_Glasses_in_the_Metastable_Regime_up_to_Jamming_I_Thermodynamics.pdf)]

(10) **R. Jadrich** and K. S. Schweizer, *Physical Review E* **86**,061503(2012); “Theory of Kinetic Arrest, Elasticity, and Yielding in Dense Binary Mixtures of Rods and Spheres” [[Journal](http://dx.doi.org/10.1103/PhysRevE.86.061503), [GitHub](https://github.com/rjadrich/peer_reviewed_publications/blob/master/publications/Theory_of_Kinetic_Arrest_Elasticity_and_Yielding_in_Dense_Binary_Mixtures_of_Rods_and_Spheres.pdf)]

(11) **R. Jadrich** and K. S. Schweizer, *Journal of Chemical Physics* **135**, 234902 (2011); “Percolation, Phase Separation, and Gelation in Fluids and Mixtures of Spheres and Rods” [[Journal](http://dx.doi.org/10.1063/1.3669649), [GitHub](https://github.com/rjadrich/peer_reviewed_publications/blob/master/publications/Percolation_Phase_Separation_and_Gelation_in_Fluids_and_Mixtures_of_Spheres_and_Rods.pdf)]

AWARDS

**List of Teachers Ranked as Excellent by Their Students (With Designation of Outstanding)**

University of Illinois Center for Teaching Excellence, Spring Semester 2010

**List of Teachers Ranked as Excellent by Their Students**

University of Illinois Center for Teaching Excellence, Fall Semester 2009

**Undergraduate Senior Achievement Award**

American Chemical Society (Rochester NY Region), May 2009

**Outstanding Student in Physical Chemistry Award**

Chemistry Department, Rochester Institute of Technology, May 2009

**Outstanding Undergraduate Scholar Nominee**

Rochester Institute of Technology, November 2008

ComputING EXPERIENCE

**Programming Languages**

• C/C++, Python

**Coding**

• Monte Carlo and Molecular Dynamics Simulations

• Relative Entropy Maximization

• Integral Equation Solvers

• Simulated Annealing Optimization

• Stochastic Integration

**Statistical Packages**

• SciKit-Learn [Python]

• Gensim for Natural Language Processing and Topic Modeling [Python]

**Mathematical Packages**

• Mathematica

• GSL Mathematical Library [C/C++]

• KINSOL Optimization Code (Part of Sandia National Labs SUNDIALS suite) [C/C++]

**Molecular Simulation Packages**

• Groningen Machine for Chemical Simulations (GROMACS)

**Statistical Mechanics Probabilistic Optimization Packages**

• Versatile Object-oriented Toolkit for Coarse-graining Applications (VOTCA)

**Supercomputing Experience**

• Texas Advanced Computing Center (TACC)

Relevant Graduate Coursework Fall 2010

Atomic Scale Simulations

• Monte Carlo and Molecular Dynamic Simulation

• Genetic Algorithms and Simulated Annealing

• C/C++ and Python Coding of Monte Carlo and Molecular Dynamics Simulations

Oral Presentations

**“The Origin of and Conditions for Clustering in Fluids with Competing Interactions”**

American Physical Society March Meeting, San Antonio Convention Center

San Antonio, Texas (March 2-6, 2015)

**“Directing Colloidal Structure Using a Quench-Disordered Large Mesh Fiber Network”**

American Physical Society March Meeting, Colorado Convention Center

Denver, Colorado (March 3-7, 2014)

**“Kinetic Arrest, Mechanical Response and Massively Reconfigurable Assembly in Rod-Sphere Nanoparticle Mixtures”**

Theoretical Chemistry Institute Seminar Series, University of Wisconsin-Madison

Madison, Wisconsin (February 17, 2014)

**“Percolation, Structure, Kinetic Arrest, and Mechanical Response in Dense Mixtures of Rods and Nanospheres”**

Midwest Theoretical Chemistry Conference, University of Illinois at Urbana - Champaign

Urbana, Illinois (May 29-31, 2013)

**“Microscopic Theories of the Structure and Glassy Dynamics of Ultra-Dense Hard Sphere Fluids”**

American Physical Society March Meeting, Baltimore Convention Center

Baltimore, Maryland (March 18-22, 2013)

**“Dynamical Phases and Rheology of Rod-Sphere Nanoparticle Mixtures”**

American Physical Society March Meeting, Boston Convention Center

Boston, Massachusetts (February 27 – March 2, 2012)

**“Percolation, Structure, Kinetic Arrest, and Mechanical Response in Dense Mixtures of Rods and Nanospheres”**

83rd Annual Society of Rheology Meeting, InterContinental Hotel and Conference Center

Cleveland, Ohio (October 9-13, 2011)

TEACHING EXPERIENCE

University of Illinois at Urbana-Champaign Spring 2010

Teaching Assistant for CHEM 315: Instrumental Chemical Systems Lab

• Taught Fundamentals of Nuclear Magnetic Resonance (NMR) Spectroscopy

• Demonstrated and Assisted in Using the NMR Spectrometer

• Taught Analysis of NMR Data with NUTS Software

• Graded Weekly NMR Lab Reports

Chemistry Learning Center Tutor

• Provided Homework and Studying Support to Students from all Chemistry Courses

University of Illinois at Urbana-Champaign Fall 2009

Teaching Assistant for CHEM 102: General Chemistry I

• Held Six Weekly 50 minute Discussion Sections

• Graded Quizzes and Administered Examinations

Rochester Institute of Technology Winter 2008-2009

Teaching Assistant for 1008 - 261: Quantitative Analysis

• Helped Construct and Grade Quizzes and Exams

• Provided Tutoring Outside of Class

Rochester Institute of Technology Fall 2008-2009

Teaching Assistant for 1014 - 447: Chemical Kinetics Lab

• Helped Teach and Assist With the Various Chemical Measurement Techniques

Rochester Institute of Technology Winter 2006-2007

Teaching Assistant for 1008 - 265: Quantitative Analysis Lab

• Aided Students in Deploying a Wide Variety of Wet Lab Chemical Techniques as Well as Lab Safety

• Helped Students Develop Lab Writing Skills

MEMBERSHIPS

American Physical Society

references

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University of Illinois at Urbana – Champaign

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University of Illinois at Urbana – Champaign

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**Professor Martin Gruebele**

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