

BHUVNESH BHARTI

Cain Department of Chemical Engineering, Louisiana State University
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PROFESSIONAL EXPERIENCE

- 2016-present** *Assistant Professor*, Cain Department of Chemical Engineering
Louisiana State University, Baton Rouge, LA
- 2012-2016** *Research Assistant Professor, and Postdoctoral Research Associate*
Chemical and Biomolecular Engineering, NC State University, Raleigh, NC
- 2014** *Postdoctoral Research Associate*, Research Center for Exotic NanoCarbons
Shinshu University, Nagano, Japan
- 2009-2012** *Graduate Research Assistant*, Institut für Chemie, Stranski Laboratorium,
Technische Universität, Berlin, Germany
- 2008-2009** *Undergraduate Research Assistant*, Department of Chemistry
Panjab University, Chandigarh, India

EDUCATION

- 2009-2012** *Ph.D. – Physical Chemistry*, Institut für Chemie, Stranski Laboratorium,
Technische Universität, Berlin, Germany
- 2004-2009** *Master of Science (Honours School), Bachelor of Science (Honours School)*
Panjab University, Chandigarh, India

FUNDING AND SUPPORT

- As co-PI (~10% sub-award): NSF – CBET: Particulate and Multiphase processes, “ Establishing the principles and demonstrating the unique properties of novel reconfigurable nano- and microparticle structures bound by liquid bridges” (\$ 293,632) – 2016-2019
- Fellowship in Research Triangle Material Research and Engineering Center (RT-MRSEC) by National Science Foundation (NSF) – 2012-2016
- Short-term postdoctoral fellowship by Japan Society for the Promotion of Science (JSPS) – 2014
- Doctoral fellowship award in International Research Training Group (IRTG-1524) by Deutsche forschungsgemeinschaft (DFG) – 2009-2012

RESEARCH INTERESTS

Nanoscience, colloid and interface science, bio-nano interactions, soft matter, directed and self-assembly, active materials, non-equilibrium assemblies

ACADEMIC ACHIEVEMENTS AND AWARDS

- *Springer Theses Award* to the doctoral thesis – 2014
- 2nd prize for poster presentation (Postdoc. category) in 127th North Carolina ACS local section conference – 2013
- Travel Grant Award for Young Scientists for attending IACIS conference in Sendai, Japan – 2012
- All India Graduate Aptitude Test in Engineering (GATE) 95.1 percentile – 2009
- All India CSIR-NET for Junior Research Fellowship (JRF) – 2008 and 2009
- All India Rank 127 in Combined Entrance Test (CET) conducted by Panjab University –2004

STUDENT MENTORSHIP AND TEACHING EXPERIENCE

- Current group members at LSU
 - Graduate student: JinGyun Lee
 - Undergraduate students: Jordan Cantrell, Jensen Granier, Ethan Cramer, Caroline Kieffer, Stacey Wieseneck, Keaton Teas
 - High school student: Olivia Carroll
- Mentees before joining LSU
 - Graduate students: Koohee Han (NCSU, 2013-2016), Jens Meissner (TU Berlin, 2009-2015), Radovan Kukobat (Shinshu Univ., 2014-2015), Nacami Maseko (NCSU, 2012-2013), Shan Zhu (NCSU, 2012-2013)
 - Undergraduate students: Aakash Kumar (NCSU, 2013-2015), Zachary Iszard (Texas State Univ., 2013)
- Chemical Engineering Thermodynamics (ChE – 3172) taught > 200 undergraduate students at LSU in Fall 2016
- Physical chemistry and general chemistry *course instructor* for M.Sc.-Chemistry major students preparing for UGC-CSIR entrance test (India) – Summer 2009

PEER REVIEWING/CONFERENCE SESSION CHAIRS

- Invited reviewer of articles/proposals submitted to *Adv. Funct. Mater.*, *Nanoscale*, *J. Am. Chem. Soc.*, *J. Mater. Chem.*, *Langmuir*, *Chem. Commun.*, *Soft matter*, *New J. Chem.*, *J. Coll. Inter. Sci.*, etc.
- NSF panels reviewer – Feb., and March 2017
- Session chair at 90th, and 88th ACS Colloid and Surface Science Symposium – June 2014, and 2016
- Session co-organizer RAMC conference – Sept. 2016

OUTREACH AND SERVICES

- New demonstration entitled “Confused Colloids and Mad Magnetic Materials” developed for middle school students participating in LSU ENGage program – April 2017
- Invited talk entitled “*Sandcastle-like future nanomaterials*” for general public at Nature Research Center, North Carolina Museum of Natural Sciences, Raleigh, NC – Sept. 2014
- Invited judge for the North Carolina School of Science and Mathematics (NCSSM) Regional Science Fair – Feb. 2015, and summer Research Experience for Undergraduates (REU) symposium at Duke University – July 2015

PROFESSIONAL ORGANIZATIONS

- American Chemical Society (ACS)
- American Institute of Chemical Engineers (AIChE)

RESEARCH PRESENTATIONS

12 invited talks, and > 30 conference talks at various universities and international conferences.

PUBLICATIONS

1. K. Han, C. W. Shields, N. M. Diwakar, **B. Bharti**, G. P. Lopez, O. D. Velev, “Sequence-Encoded Colloidal Origami and Microbot Assemblies From Patchy Magnetic Cubes”, *Sci. Adv.*, **2017**, *3*, e1701108 (1-6). [Link](#)
2. S. Roh, D. P. Parekh, **B. Bharti**, S. D. Stoyanov, O. D. Velev, “Three-Dimensional Printing by Multiphase Silicone/Water Capillary Inks”, *Adv. Mater.*, **2017**, *29*, 1701554 (1-7). [Link](#)
3. O. I. Bernal, **B. Bharti**, M. C. Flickinger, O. D. Velev, “Fabrication of Photoreactive Biocomposite Coatings via Electric Field Assisted Assembly of Cyanobacteria”, *Langmuir*, **2017**, *33*, 5304-5313. [Link](#)
4. **B. Bharti**, D. Rutkowski, K. Han, A. U. Kumar, C. K. Hall, O. D. Velev, “Capillary Bridging As a Tool for Assembling Discrete Clusters of Patchy Particles”, *J. Am. Chem. Soc.*, **2016**, *138*, 14948-14953. [Link](#) 14953 – JACS spotlight, **2016**, *138*, 15510.
5. **B. Bharti**, F. Kogler, C. K. Hall, S. H. L. Klapp, O. D. Velev, “Multidirectional Colloidal Assembly in Concurrent Electric and Magnetic Fields”, *Soft Matter*, **2016**, *12*, 7747-7758. [Link](#) – Journal cover
6. A.P. Richter, **B. Bharti**, H. Armstrong, J. S. Brown, D. Plemmons, V. N. Paunov, S. D. Stoyanov, O. D. Velev, “Nanocolloids from Biomass: Development of Biodegradable Lignin Particles with Tunable Surface Properties”, *Langmuir*, **2016**, *32*, 6468-6477. [Link](#)
7. D. Morales, **B. Bharti**, M. D. Dickey, O. D. Velev, “Directional Bending of Responsive Hydrogel Sheets Guided by Field-Assembled Microparticle Endoskeleton Structures”, *Small*, **2016**, *12*, 2283-2290. [Link](#)
8. **B. Bharti**, A.-L. Fameau, M. Rubinstein, O. D. Velev, “Nanocapillarity-mediated Magnetic Assembly of Nanoparticles into Ultraflexible Filaments and Reconfigurable Networks” *Nature Mater.*, **2015**, *14*, 1104-1109. [Link](#) – Highlighted in Science Daily, Scicasts, NSF homepage, ChemEurope etc...
9. A. P. Richter, J. S. Brown, **B. Bharti**, A. Wang, S. Gangwal, K. Houck, E. A. C. Hubal, V. N. Paunov, S. D. Stoyanov, O. D. Velev, “An Environmentally Benign Antimicrobial Nanoparticle Based on Silver-infused Lignin Core” *Nature Nanotechnol.*, **2015**, *10*, 817-823. [Link](#) – Highlighted in C&E News, Azonano, IFLscience, specktrum.de, etc...
10. **B. Bharti**, O. D. Velev, “Assembly of Reconfigurable Colloidal Structures by Multidirectional Field Induced Interactions” *Langmuir*, **2015**, *31*, 7897-7908. [Link](#) – ACS editors’ choice, Journal cover
11. **B. Bharti**, O. D. Velev, “Multi-directional, Multicomponent Electric Field Driven Assembly of Complex Colloidal Chains” *Z. Phys. Chem.*, **2015**, *229*, 1075-1088. [Link](#)
12. **B. Bharti**, A.-L. Fameau, O. D. Velev, “Magnetophoretic Assembly of Flexible Nanoparticle/Lipid Microfilaments” *Faraday Discuss.*, **2015**, *181*, 437-448. [Link](#)

B. Bharti curriculum vitae

13. A. Ghoorchian, J. R. Simon, B. Bharti, W. Han, X. Zhao, A. Chilkoti, G. P. López, “Bio-inspired Reversibly-crosslinked Hydrogels Comprising Polypeptide Micelles Exhibit Enhanced Mechanical Properties” *Adv. Funct. Mater.*, **2015**, *25*, 3122-3130. [Link](#)
14. J. Meissner, A. Prause, B. Bharti, G. H. Findenegg, “Characterization of Protein Adsorption onto Silica Nanoparticles: Influence of pH and Ionic Strength”, *Coll. Poly. Sci.*, **2015**, *293*, 3381-3391. [Link](#)
15. R. Kukobat, D. Minami, T. Hayashi, Y. Hattori, T. Matsuda, M. Sunaga, B. Bharti, K. Asakura, K. Kaneko, “Sol-gel Chemistry Mediated Zn/Al-Based Complex Dispersant for SWCNT in Water Without Foam Formation” *Carbon*, **2015**, *94*, 518-523. [Link](#)
16. J. Meissner, A. Prause, C. D. Tommaso, B. Bharti, G. H. Findenegg, “Protein Immobilization in Surface-functionalized SBA-15: Predicting the Uptake Capacity From the Pore Structure”, *J. Phys. Chem. C*, **2015**, *119*, 2438-2446. [Link](#)
17. B. Bharti, R. Kukobat, D. Minami, K. Kaneko, “Modulating SWCNTs-silica Interactions for Enhanced Dispersibility and Hybrid Cryogel Formation” *Colloid Interface Sci. Commun.*, **2014**, *3*, 13-17. [Link](#)
18. B. Bharti, G. H. Findenegg, O. D. Velev, “Analysis of the Field-assisted Permanent Assembly of Oppositely Charged Particles”, *Langmuir*, **2014**, *30*, 6577-6587. [Link](#)
19. B. Bharti, J. Meissner, S. H. L. Klapp, G. H. Findenegg, “Bridging Interaction of Protein with Silica Nanoparticles: Influence of pH, Ionic Strength and Protein Concentration”, *Soft Matter*, **2014**, *10*, 718-728. [Link](#)
20. C. W. Shields, S. Zhu, Y. Yang, B. Bharti, J. Liu, B. B. Yellen, O. D. Velev, G. P. López, “Field-Directed Assembly of Patchy Anisotropic Microparticles with Defined Shape”, *Soft Matter*, **2013**, *9*, 9219-9229. [Link](#)
21. B. Bharti, G. H. Findenegg, O. D. Velev, “Co-Assembly of Oppositely Charged Particles into Linear Clusters and Chains of Controllable Length”, *Sci. Rep.*, **2012**, *2*, 1004 (1-5). [Link](#)
22. B. Bharti, M. Xue, J. Meissner, V. Cristiglio, G. H. Findenegg, “Assembling Wormlike Micelles in Tubular Nanopores by Tuning Surfactant-Wall Interactions”, *J. Am. Chem. Soc.*, **2012**, *134*, 14756-14759. [Link](#)
23. B. Bharti, G. H. Findenegg, “Protein-specific Effects of Binding to Silica Nanoparticles”, *Chem. Lett.*, **2012**, *41*, 1122-1124. [Link](#)
24. B. Bharti, J. Meissner, U. Gasser, G. H. Findenegg, “Surfactant Adsorption and Aggregate Structure at Silica Nanoparticles: Effects of Particle Size and Surface Modification”, *Soft Matter*, **2012**, *8*, 6573-6581. [Link](#)
25. S. K. Mehta, S. Chaudhary, B. Bharti, M. Gradzielski, “Correspondence via Electron and Charge Carrier Dynamics of Silver Nanoparticles with Organic Dyes”, *Sci. Adv. Mater.*, **2012**, *4*, 78-92. [Link](#)
26. B. Bharti, J. Meissner, G. H. Findenegg, “Aggregation of Silica Nanoparticles Directed by Adsorption of Lysozyme”, *Langmuir*, **2011**, *27*, 9823-9833. [Link](#)

Book/Chapter(s)

- Book Title: “*Adsorption, aggregation and structure formation in systems of charged particles: From colloidal to supracolloidal assembly*”
Author: B. Bharti
Publisher: Springer International Publishing, ISBN: 978-3-319-07736-9

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- Chapter Title: “*Principles of dielectrophoretic particle assembly and its application to fabricate permanent colloidal chains*”
Book title: Encyclopedia of Surface and Colloid Science (3rd edition)
Authors: B. Bharti, G. H. Findenegg and O. D. Velev
Editor: P. Somasundaran,
Publisher: Taylor and Francis Group, ISBN: 978-1-466-59045-8