

---

## Dr. TARIQ JAMIL

Assistant Professor

NED University of Engineering and Technology, Karachi-Pakistan

[mtariqjamil@gmail.com](mailto:mtariqjamil@gmail.com), [tariqjamil@neduet.edu.pk](mailto:tariqjamil@neduet.edu.pk)

<https://orcid.org/0000-0002-3691-0343>

[Google Scholar Profile](#)

---



### Education

- ❖ University of Colorado-Boulder, CO, USA
    - Masters leading to Ph.D. in 'Chemical Engineering' 12/2018  
Thesis Title: "Understanding the Dynamics of Multiphase Cement and Clay-Based Materials from the Nanoscale"
  - ❖ N.E.D University of Engineering and Technology, Karachi-Pakistan
    - Masters in 'Mechanical Engineering' 07/2008  
(Majors courses: Material Science, Computer Aided Design, Advance Stress Analysis, Design Engineering)
    - Bachelor in 'Mechanical Engineering' 05/2004  
(Final year project related to Finite Element Analysis, Computer Aided Design, Stress Analysis)
- 

### Honors and Awards

- ❖ Scholarship from École Polytechnique Fédérale de Lausanne to attend "4<sup>th</sup> LC<sup>3</sup> Doctoral School on Characterization Methods of Blended Cements" at EPFL, Lausanne, Switzerland 04/2018
- ❖ Scholarship from "Higher Education Commission of Pakistan" for pursuing Ph.D. at the USA 2014-2017
- ❖ "University of Colorado Boulder Graduate School Domestic Travel Grant" to attend "41<sup>st</sup> International Conference on Advanced Ceramics and Composites" at Daytona Beach, FL, USA 01/2017
- ❖ "ACerS Travel Assistance" to attend ElectroCeramic Summer School at Limoges, France, June 23-25, 2016 06/2016
- ❖ "Best Poser Award" at "5<sup>th</sup> World Congress on Materials Science & Engineering", Alicante, Spain 06/2016
- ❖ "TMS Student Travel Grant" to attend MS&T 2015 conference at Columbus, OH, USA 10/2015
- ❖ "Award of Distinction" in the poster presentation at 23<sup>rd</sup> World Forum on Advance Materials (PolyChar 23), Lincoln, NE, USA 05/2015

- ❖ “NSF fellowship” to attend 23<sup>rd</sup> World Forum on Advance Materials (PolyChar 23), Lincoln, NE, USA 05/2015
- ❖ Received first prize in “Cement Grinding Aids Specialist Training” at Sika Cooperate Services, Liemen, Germany 04/2011

### **Appointments**

- ❖ **Assistant Professor** (on study leaves between 01/2014 - 08/2018) 08/2011-till date  
N.E.D University of Engineering and Technology, Karachi-Pakistan
- ❖ **Research Assistant**, Chemical & Biological Engineering Department, 09/2015-08/2018  
University of Colorado-Boulder, USA
- ❖ **Graduate Assistant**, Polymer Engineering Department 01/2014-08/2015  
University of Akron, Ohio, USA
- ❖ **Manager - Sales & Technical Services**, Sika Pakistan Private Limited 04/2010-07/2011  
(Mainly responsible for Sika industrial business across the country, provide technical support and conduct training on industrial adhesives and cement grinding aids)
- ❖ **Assistant Manager**, Honda Atlas Cars Pakistan Private Limited 05/2005-04/2010  
(Mainly responsible for aftermarket product quality and technical support)
- ❖ **Lecturer**, Mechanical Engineering Department, 01/2004-05/2005  
N.E.D University of Engineering and Technology, Karachi-Pakistan

### **Internships and Exposure**

- ❖ As a consultant for Occupational Health and Safety (OHSAS 18000) Summer  
certification at Hino Pak Motors Ltd., Karachi-Pakistan 2004
- ❖ Internship at Bin-Qasim Thermal Power Station, Karachi-Pakistan End of Fall  
2002
- ❖ Internship at National Refinery Limited, Karachi-Pakistan Summer  
2002

### **Projects**

- ❖ “Modeling Gellan-Clay Interactions and Structure-Property Relationships” Summer  
using atomistic simulation for Procter & Gamble USA with Prof. Dr. Hendrik 2015  
Heinz research group
- ❖ “Modeling and Finite Element Analysis of Fuel Supply System of Islamabad International Airport” in coordination with Siemens Fall 2004  
Pakistan Private Limited

- ❖ “Modeling and Finite Element Analysis of Trailer Mounted Refueler” for Pakistan Air Force in coordination with Metal Engineering Works (Final Year Undergraduate Project) 2003

### **Professional Training**

- ❖ “4<sup>th</sup> LC<sup>3</sup> Doctoral School on Characterization Methods of Blended Cements” at EPFL, Lausanne, Switzerland 04/2018
- ❖ Cement Chemistry and Sustainable Cementitious Materials, online course initiative of EPFL, Switzerland through edX 11/2017
- ❖ “ElectroCeramics Summer School” arranged by European Ceramic Society (ECerS) at Limoges, France 06/2016
- ❖ Short courses on “Characterization of Materials” at 23<sup>rd</sup> Word Forum on Advance Materials” Lincoln, NE, USA 05/2015
- ❖ “Training on “Bonding & Sealing Systems” at Sika Cooperate Services, Widen, Switzerland 06/2011
- ❖ “Cement Grinding Aids Specialist Course” at Sika Cooperate Services, Liemen, Germany 04/2011
- ❖ Various automotive-related training
  - New model training (City’09) at Honda Asia Oceana Training Center, Bangkok, Thailand 09/2008
  - Instructor training for Customer Handling (H-SMART), Maintenance Technician (MT) and Repair Technician (RT) at Honda Atlas Cars (Pakistan) Ltd, Lahore-Pakistan 2005-2010
  - Noise and Vibration Training at Honda Seil Cars Ltd, Greater Noida, India 04/2007
  - Electrical Diagnostic Training at Honda Motor Cooperation Ltd., Wako-Shi, Japan 02/2007
  - New Model training (Civic’09) at Honda Asia Oceana Training Center, Bangkok, Thailand 01/2006

### **Invited Talks**

4. “Introduction about Pakistan and Potential for the Production of Calcined Clay-based Materials” + “Insights from the Multiscale Modeling of Construction Materials” at Wuhan University of Technology, Wuhan, China – October 21, 2019
3. “Understanding the Dynamics of Multiphase Cement and Clay-Based Materials from the Nanoscale” at Swiss Federal Institute of Technology Lausanne, Switzerland - August 8, 2019
2. “PCE Superplasticizer and Hydrated Cement Phases” at Institute of Building Materials, ETH Zurich, Switzerland - June 20, 2016
1. “Concrete, Superplasticizer, and Energy” at Energy Frontiers 2016 (SWITCHCU), Boulder, CO, USA - March 10, 2016

---

## Conference Contributions (Talks, Posters incl. coworkers)

- 19.P “Peptide Adsorption on Hydroxyapatite Surfaces and Implications on Shape and Mineralization: Impact of Sequence and Electrolyte pH” at AIChE Annual Meeting at David L. Lawrence Convention Center, Pittsburgh, Pennsylvania. USA - October 29, 2018  
(Presented by Juan Liu, University of Colorado Boulder)
- 18.P “All-Atom Models of Tobermorite 11 Å and 14 Å – Benchmarks for Realistic Modelling of C-S-H” at Swiss Chemical Society Fall Meeting at University of Bern, Switzerland – August 21, 2017  
(Presented by Ratan Mishra, Institute for Building Materials, ETH Zurich)
- 17.T “All-Atom Models of Tobermorite 11 Å and 14 Å – Benchmarks for Realistic Modelling of C-S-H” at 8<sup>th</sup> Advances in Cement-Based Materials (Cements 2017), Georgia Tech., Atlanta, USA – June 27, 2017
- 16.P “A Calcium Silicate Hydrate Model Builder and Accurate Force Field Parameters for Atomistic Simulations of C-S-H Polymorphs Using INTERFACE-MD” at 8<sup>th</sup> Advances in Cement-Based Materials (Cements 2017), Georgia Tech., Atlanta, USA – June 26, 2017
- 15.P “All-Atom Models of Tobermorite 11 Å and 14 Å – Benchmarks for Realistic Modelling of C-S-H” at Competence Center for Materials and Processes (MaP) Graduate Symposium, ETH Zürich, Switzerland June 22, 2017  
(Presented by Ratan Mishra, Institute for Building Materials, ETH Zurich)
- 14.P “A Calcium Silicate Hydrate Model Builder and Accurate Force Field Parameters for Atomistic Simulations of C-S-H Polymorphs Using INTERFACE-MD” at 8<sup>th</sup> Advances in Cement-Based Materials (Cements 2017), Georgia Tech., Atlanta, USA – June 26, 2017
- 13.P “All-Atom Models of Tobermorite 11 Å and 14 Å – Benchmarks for Realistic Modelling of C-S-H” at “International Workshop on Atomistic Simulations for Cementitious Materials,” Les Diablerets, Switzerland - May 17, 2017  
(Presented by Ratan Mishra, Institute for Building Materials, ETH Zurich)
- 12.P “All-atoms Models of Tobermorite 11 Å and 14 Å - The First Step towards the Development of Realistic Models of C-S-H” at 41<sup>st</sup> International Conference and Expo on Advanced Ceramics and Composites, Daytona Beach, FL, USA – January 24, 2017
- 11.T “Mechanism of Molecular Interaction of Superplasticizer Oligomers with Hydrated Cement Phases” at 5<sup>th</sup> World Congress on Materials Science & Engineering”, Alicante, Spain – June 15, 2016
- 10.P “Refined Parameters for Cations and Anions in Aqueous Solution for Atomistic Force Fields” at 5<sup>th</sup> World Congress on Materials Science & Engineering”, Alicante, Spain – June 14, 2016

- 9.T “Development of Atomistic Force Field and Interfacial Study of Cementitious Minerals” at 4<sup>th</sup> International workshop on mechanisms and modeling of waste/cement interactions, Murten, Switzerland - April 1, 2016  
(Presented by Ratan Mishra, Institute for Building Materials, ETH Zurich)
- 8.T “Prediction of Surface and pH-Specific Binding of Peptides to Metal and Oxide Nanoparticles” at MS&T 2015, Columbus, OH, USA - October 7, 2015  
(Presented research of Prof. Dr. Hendrik Heinz, ChBE CU Boulder, USA)
- 7.T “Mechanism Of Molecular Interaction Of Superplasticizer Oligomers With Hydrated Cement Phases Using Molecular Dynamics” at MS&T 2015, Columbus, OH, USA - October 6, 2015
- 6.T “Refined Parameters for Cations and Anions in Aqueous Solution for Atomistic Force Fields” at MS&T 2015, Columbus, OH, USA - October 5, 2015
- 5.P “Mechanism of Molecular Interaction of Superplasticizer Oligomers with Hydrated Cement Phases” at 23<sup>rd</sup> World Forum on Advance Materials (PolyChar 23), Lincoln, NE, USA – May 13, 2015
- 4.T “Nano-coatings on Clay and Cement: Understanding the Action of Surfactants and Grinding Aids” at MS&T 2014, Pittsburgh, PA, USA - October 15, 2014.  
(Presented research of Prof. Dr. Hendrik Heinz, ChBE CU Boulder, USA)
- 3.P “Understanding the Interaction of Oligomers with Hydrated Cement Phase” at The Akron Polymer Conference, Akron, OH, USA - October 2, 2014
- 2.P “Understanding the Interaction of Tobermorite with PolyAcrylate Oligomers having PEO Branches” at 6<sup>th</sup> International Symposium on Polymer Materials Science, Akron, OH, USA- July 28, 2014
- 1.T “Accurate Atomistic Force Fields and Models for Cement Minerals and Aqueous Organic Interfaces” at 5<sup>th</sup> Advances in Cement-based Materials, Cookeville, Tennessee - July 11, 2014  
(Presented research of Prof. Dr. Hendrik Heinz, ChBE CU Boulder, USA)

### Publications in Peer-Reviewed Journals

5. “Mechanism of Molecular Interaction of Acrylate-Polyethylene Glycol Acrylate Copolymers with Calcium Silicate Hydrate Surfaces”  
Jamil, T.; Javadi, A., Heinz, H., Green Chemistry (in review after revision) (**IF > 9.4**)
- 4 Polyacrylonitrile Interactions with Carbon Nanotubes in Solution: Conformations and Binding as a Function of Solvent, Temperature, and Concentration.  
Pramanik, C.; Jamil, T. (co-first author) ; Gissinger, J. R.; Guittet, D.; Arias-Monje, P. J.; Kumar, S.; Heinz, H. Journal of Advanced Functional Materials, 2019, 1905247. (**IF > 15.6**)
3. “Dynamics of Carbohydrate Strands in Water and Interactions with Clay Minerals: Influence of pH, Surface Chemistry, and Electrolytes”  
Jamil, T.; Gissinger, J. R.; Garley, A.; Saikia, N.; Upadhyay, A. K.; Heinz, H., Nanoscale 2019, 11 (23), 11183-11194. [DOI:10.1039/C9NR01867K](https://doi.org/10.1039/C9NR01867K) (**IF = 6.97**)

2. "Insight into Induced Charges at Metal Surfaces and Biointerfaces using a Polarizable Lennard–Jones Potential." I. L. Geada, H. Ramezani-Dakhel, T. Jamil, M. Sulpizi, H. Heinz, Nature Communication, 9, 716 (2018), [DOI:10.1038/s41467-018-03137-8](https://doi.org/10.1038/s41467-018-03137-8) (IF = **11.88**)
  1. "cemff: A force field database for cementitious materials including validations, applications, and opportunities."  
R. K. Mishra, A. K. Mohamed, D. Geissbühler, H. Manzano, T. Jamil, R. Shahsavari, A. G. Kalinichev, S. Galmarini, L. Tao, H. Heinz, R. Pellenq, A. C. T. van Duin, S. C. Parker, R. J. Flatt, P. Bowen, Cement and Concrete Research 102, 68-89 (2017), [DOI:10.1016/j.cemconres.2017.09.003](https://doi.org/10.1016/j.cemconres.2017.09.003) (IF > **3.78**)
- 

### **Acknowledged in Peer-Reviewed Journals Publications**

1. "Carbon Nanotube Dispersion in Solvents and Polymer Solutions: Mechanisms, Assembly, and Preferences"  
C. Pramanik, J. R. Gissinger, S. Kumar, H. Heinz, ACS Nano 11, 12805-12816 (2017). [DOI: 10.1021/acsnano.7b07684](https://doi.org/10.1021/acsnano.7b07684)
- 

### **Professional Affiliation**

- ❖ American Chemical Society (ACS)
  - ❖ The Minerals, Metals & Materials Society (TMS)
  - ❖ American Ceramic Society (ACerS)
  - ❖ Pakistan Engineering Council (PEC)
- 

### **Community/Research Voluntarily Services**

- ❖ Delivered motivational speech in student's party and award ceremony of Jamiat Hakimaan Delhi Welfare Organization at Main Auditorium of NED University of Engineering and Technology on Jan 20, 2019
  - ❖ Took part in "Space Habitat Human Factors Testing" on Nov 15, 2016 - An Aerospace Graduate Project of University of Colorado Boulder funded by Orbital ATK.
  - ❖ Worked as a volunteer for the academic year 2016-17 for Creekside Elementary School located at Boulder Valley District School, Boulder CO, USA.
  - ❖ Did fundraising and played a vital role in arranging "International Conference on Energy and Sustainability - 2013", at NED University of Engineering and Technology Karachi-Pakistan on April 27, 2013.
-

## **Extracurricular Activities**

- ❖ Swimming
  - ❖ “National Association of Underwater Instructors” (NAUI – USA) certified scuba diver
- 

## **Courses taught**

- ❖ Undergrad
    - Material Science and Metallurgy
    - Finite Element Analysis
    - Stress Analysis
    - Engineering Drawing
    - Computer Aided Design and Manufacturing
  - ❖ M. Engg.
    - Materials Science
    - Design Engineering
    - Finite Element Analysis
-