

SINAN KETEN, PH.D.

Biographical Sketch

A. PROFESSIONAL PREPARATION

Bogazici University (Turkey)	Civil Engineering	B.S., June 2005
Massachusetts Institute of Technology	Civil and Environmental Engineering	ME., June 2006
Massachusetts Institute of Technology	Civil and Environmental Engineering	Ph.D., June 2010

B. APPOINTMENTS

Assistant Professor of Mechanical Engineering (joint appointment with Civil & Environmental Engineering), Northwestern University, since September 2010.

C. PRODUCTS (64 peer reviewed publications, 1785 citations, h-index:20 [Google])

Selected Publications

1. X. Qin, W. Xia, B. Sinko, **S. Keten***, "Tuning Glass-Transition in Polymer Nanocomposites with Functionalized Cellulose Nanocrystals through Nanoconfinement", *Nano Letters*, 2015, 15(10), pp. 6738–6744.
2. E. DeBenedictis, E. Hamed, **S. Keten***, "Mechanical Reinforcement of Proteins with Polymer Conjugation", *ACS Nano*, 2016, 10 (2), pp 2259–2267. (Cover Article)
3. W. Xia, D. Hsu, and **S. Keten***, "Molecular Weight Effects on the Glass Transition and Confinement Behavior of Polymer Thin Films", *Macromolecular Rapid Communications*, 2015, 36, pp. 1422-1427 (Cover Article).
4. P. Egan, R. Sinko, P. LeDuc*, **S. Keten*** "The role of mechanics in biological and synthetic bioinspired systems", *Nature Communications*, 2015, 6. (Invited Review).
5. D. Hsu, W. Xia, S. Arturo, and **S. Keten***, "Thermomechanically Consistent and Transferable Coarse-graining of Polystyrene Stereoisomers", *Macromolecules*, 2015, 48 (9), pp. 3057–3068.
6. D. Hsu, W. Xia, S. Arturo, and **S. Keten***, "A systematic method for thermomechanically consistent coarse-graining: a universal model for methacrylate-based polymers", *Journal of Chemical Theory and Computation*, 2014, 10 (6), pp. 2514–2527.
7. B. Abberton, W.K. Liu, **S. Keten***, "Anisotropy of Shear Relaxation in Doubly Confined Thin Films of Unentangled Polymer Melts", *Macromolecules*, 2015, 48(20), pp. 7631–7639.
8. B. Sinko, S. Mishra, L. Ruiz, N. Brandis, **S. Keten***, "The dimensions of biological cellulose nanocrystals maximize fracture strength", *ACS Macro Letters*, 2014, 3, pp 64–69.
9. W. Xia, S. Mishra, **S. Keten***, "Substrate vs. Free Surface: Competing Effects on the Glass Transition of Polymer Thin Films", *Polymer*, 2013, 54(21), pp. 5942–5951.
10. **S. Keten**, Z. Xu, B. Ihle, M. J. Buehler, "Nanoconfinement controls stiffness, strength and mechanical toughness of β -sheet crystals in silk", *Nature Materials*, 2010, 9, p. 359-367.

D. SYNERGISTIC ACTIVITIES

- **Awards:** ONR Young Investigator Award (2015), ONR Director of Research Early Career Award, ASME Applied Mechanics Division Haythornthwaite RIG Award (2012), MRS Graduate Student Award (2010).
- **Societal Activities:** Vice-Chair, ASCE EMI Molecular Scale Modeling & Experimentation Committee, 2013, Co-organizer (2015) and Chair (in 2016), Midwest Mechanics and Materials Workshop, Track Chair, ASME NEMB 2015, Multi-scale Modeling, Associate Track Chair, World Congress of Biomechanics, 2014, Track secretary and co-chair, Multiscale Modeling and Experiment in Biology and Medicine, ASME NEMB 2013, Symposium organizer, ASME IMECE 2011, 2012 & 2013, USACM Thematic Conference on

Multiscale Methods in Medicine and Biology, 2012, ASCE EMI 2012, SES Meeting, 2011; Member of ASCE EMI Biomechanics Committee, ASME Soft Materials Committee, MRS Task force on landscapes and opportunities.

- **Editorial Activities:** Member of the editorial board for *BioNanoScience* and *ACS Biomaterials Science and Engineering Journals*; peer reviewer for 30+ journals.
- **Panel Service:** Proposal Panelist/Reviewer for NSF Biomechanics and Mechanobiology Program (3 times), NSF Mechanics of Materials Program (4 times), DOE Biomolecular Materials Program (external review), NSF SSE SI2 Program (external review), NSF Materials Engineering and Processing Program, NSF Design of Engineering Material Systems Program, NSF Structural Materials and Mechanics Program, NSF EPSCoR (external review), NSF DMREF Program, NIH Predictive Multiscale Models for Biomedical, Biological, Behavioral, Environmental and Clinical Research (U01) Panel.
- **Invited/Keynote/Plenary Lectures:** 36 invited/keynote/plenary lectures, including invited seminars in universities such as MIT, Harvard, UC Berkeley, Brown University, Columbia University, University of Illinois, ETH; and invited talks at MRS, APS, and ACS meetings.

E. COLLABORATORS AND OTHER AFFILIATIONS

(1) Collaborators and Co-Editors

Julie Albert, Tulane University, Steve Arturo, The Dow Chemical Company; Zdenek Bazant, Northwestern University; Cate Brinson, Northwestern University; Linda Broadbelt, Northwestern University; Jan Carmeliet, ETHZ; Dominique Derome, EMPA; Jack Douglas, NIST; Adri van Duin, Pennsylvania State University; Horacio Espinosa, Northwestern University; Jean-Francois Gaillard, Northwestern University, Jeff Gilman, NIST; Scott Grayson, Tulane University, Brett Helms, The Molecular Foundry (LBNL); James Hone, Columbia University; Jeff Kysar, Columbia University; Phil LeDuc, Carnegie Mellon University; Wing Kam Liu, Northwestern University; Rich Lueptow, Northwestern University; Sonbinh Nguyen, Northwestern University; Jim Snyder, Army Research Lab, Nicola Pugno, University of Trento – Italy; John Torkelson, Northwestern University; Matthieu Vandamme, Ecole des Ponts ParisTech; Ting Xu, University of California-Berkeley; Zhiping Xu, Tsinghua University, China.

(2) Graduate and Postdoctoral Advisors

Markus J. Buehler – Massachusetts Institute of Technology, PhD advisor

Jerry Connor – Massachusetts Institute of Technology, Master's thesis advisor.

(3) Thesis Advisor and Postgraduate-Scholar Sponsor

Post-doctoral Associates

4 former: Dr. Elham Hamed, currently at Exponent Consulting, Dr. Chen Shao, currently at Trexquant Investment, Dr. Meng Shen (co-advised with Rich Lueptow), currently a postdoctoral Fellow at Northwestern University, Dr. Marco Alsina Corvalan (co-advised with J.F. Gaillard), currently a postdoctoral fellow at Northwestern University

1 current: Dr. Amit Singh.

Doctoral Students

2 alumni: Dr. Luis Ruiz (TAM, 2015, now at Berkeley Lab); Dr. Brendan Abberton (TAM, 2015, co-advised with W.K. Liu, now at Caulfield Engineering).

9 current: Wenjie Xia (CEE), David Hsu (ME); Bobby Sinko (ME), Xin Qin (TAM), Zhaoxu Meng (CEE), Elizabeth DeBenedictis (ME), Danielle Ma (ME), Ari Benjamin (ME), Ridvan Kahraman (MSE, co-advised with Cate Brinson).

Undergraduate Researchers

12 advised at NU since 2010, **1 current:** Jake Song