

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

Associate Professor (with tenure) of Mechanical Engineering, Civil & Environmental Engineering, Northwestern University, since September 2016.

Assistant Professor of Mechanical Engineering, Civil & Environmental Engineering, Northwestern University, 2010-2016.

C. PRODUCTS (* indicates corresponding author)

Five Principal Publications

1. X. Qin, W. Xia, B. Sinko, **S. Ketten***, "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. Ketten***, "Mechanical Reinforcement of Proteins with Polymer Conjugation", *ACS Nano*, 2016, 10 (2), pp 2259–2267. (Cover Article)
3. E. DeBenedictis, J. Liu, **S. Ketten***, "Adhesion Mechanisms of Curli Subunit CsgA to Abiotic Surfaces", *Science Advances*, 2016, 2, e1600998.
4. P. Egan, R. Sinko, P. LeDuc*, **S. Ketten*** "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. Ketten***, "Thermomechanically Consistent and Transferable Coarse-graining of Polystyrene Stereoisomers", *Macromolecules*, 2015, 48 (9), pp. 3057–3068.

Other Significant Publications

6. L. Ruiz, A. Benjamin, M. Sullivan, and **S. Ketten***, "Regulating ion transport in peptide nanotubes by tailoring the nanotube lumen chemistry", *J. Physical Chemistry Letters*, 2015, 6(9), pp. 1514-1520.
7. X. Wei, Z. Meng, L. Ruiz, W. Xia, C. Lee, J. W. Kysar, J. Hone, **S. Ketten***, H. Espinosa*, "Recoverable Slippage Mechanism in Multilayer Graphene Leads to Repeatable Energy Dissipation", 2016, *ACS Nano*, 10 (2), pp 1820–1828.
8. B. Sinko, S. Mishra, L. Ruiz, N. Brandis, **S. Ketten***, "The dimensions of biological cellulose nanocrystals maximize fracture strength", *ACS Macro Letters*, 2014, 3, pp 64–69.
9. W. Xia, D. Hsu, and **S. Ketten***, "Molecular Weight Effects on the Glass Transition and Confinement Behavior of Polymer Thin Films", *Macromolecular Rapid Communications*, 36, pp. 1422–1427, (Cover Article)
10. **S. Ketten**, 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 (2016), ASME Applied Mechanics Division Haythornthwaite RIG Award (2012), MRS Graduate Student Award (2010).
- **Societal Activities:** *Fellow* of the American Physical Society (elected 2016), *Chair*, Midwest Mechanics and Materials Workshop, 2016 (*Mid.Mech.Mat*); *former Vice-Chair*

and current member, ASCE EMI Molecular Scale Modeling & Experimentation Committee; *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, ASCE EMI and SES Meetings 2011-2016; *former member* of the 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:** *Panelist* for NSF Biomechanics & Mechanobiology, Mechanics of Materials, Materials Engineering & Processing, Design of Engineering Material Systems, Structural Materials & Mechanics, and DMREF programs; *External reviewer* for DOE Biomolecular Materials, NSF SSE SI2, EPSCoR and NIH Predictive Multiscale Models for Biomedical, Biological, Behavioral, Environmental and Clinical Research (U01) program.
- **Invited/Keynote/Plenary Lectures:** 40+ 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

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; 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; 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.

3 current: Dr. Yao Zhang, Dr. Amit Singh, Dr. Wenjie Xia.

Graduate Students

4 alumni: Dr. Luis Ruiz (TAM, 2015, now postdoctoral associate at Berkeley Lab), Dr. Brendan Abberton (TAM, 2015, co-advised with W.K. Liu, now at Caulfield Engineering), Dr. David Hsu (ME, now Assistant Professor of Engineering and Physics at Wheaton College), Dr. Wenjie Xia (CEE, now CHIMAD postdoctoral scholar at NIST and Northwestern).

8 current PhD Students: Bobby Sinko (ME), Xin Qin (TAM), Zhaoxu Meng (CEE), Elizabeth DeBenedictis (ME), Danielle Ma (ME), Ridvan Kahraman (MSE, co-advised with Cate Brinson), Kerim Dansuk (ME), Nitin Hansoge (ME).

1 current Master's Student: Shizhe Feng (CEE)

Undergraduate Researchers: 14 advised at NU since 2010, **1 current.**