

Biographical Sketch: SINAN KETEN, PH.D.

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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

Director of Graduate Studies, Mechanical Engineering, Northwestern University, since September 2017.

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

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

C. PUBLICATIONS (* indicates corresponding author, 86 peer-reviewed articles, total citations = 2850, h-index= 25 [Google Scholar])

5 principal publications

1. Xia, J. Song, C. Jeong, D. D. Hsu, F. R. Phelan Jr., J. F. Douglas*, **S. Ketten***, Energy-Renormalization for Achieving Temperature Transferable Coarse-Graining of Polymer Dynamics, *Macromolecules*, **2017**, *50* (21), pp 8787–8796.
2. L. Ruiz, W. Xia, Z. Meng and **S. Ketten*** "A Coarse-Grained Model for the Mechanical Behavior of Multi-layer Graphene", *Carbon*, 2015, *82*, pp. 103-115.
3. 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.
4. E. DeBenedictis, E. Hamed, **S. Ketten***, "Mechanical Reinforcement of Proteins with Polymer Conjugation", *ACS NANO*, 2016, *10* (2), pp 2259–2267. (Cover Article)
5. 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 other significant publications

6. W. Xia, L. Ruiz, N. M. Pugno, **S. Ketten*** "Critical Length Scales and Strain Localization Govern the Mechanical Performance of Multi-layer Graphene Assemblies", 2016, *Nanoscale*, *8*, pp. 6456-6462.
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. 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.
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 and Honors:** Society of Engineering Science Young Investigator Award (2017), NAE US Frontiers of Engineering Symposium Participant (2017), Presidential Early Career Award for Scientists and Engineers (PECASE) (2017), Fellow of the American Physical Society (Division of Polymer Physics) (2016), Office of Naval Research Director of Research Early Career Award (2016), Office of Naval Research Young Investigator Program Award (ONR YIP) (2015), SEARLE Fellow for Teaching Excellence (2014), ASME Applied Mechanics Division Haythornthwaite Award (2012), Materials Research Society Graduate Student Award (2009), MIT Presidential Graduate Fellowship (2006).
- **Societal Activities:** *Chair, Midwest Mechanics and Materials Workshop, 2016, (Mid.Mech.Mat), Vice-Chair, ASCE EMI Molecular Scale Modeling & Experimentation Committee, 2013, 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 in ASME IMECE, ASCE EMI and SES Meetings 2011-2016; Member of ASCE EMI Biomechanics and ASME Soft Materials Committees, MRS Task force on landscapes and opportunities.*
- **Editorial Activities:** Associate Editor for *NPJ Computational Materials*, Member of the editorial board for *BioNanoScience*, *Scientific Reports* and *ACS Biomaterials Science and Engineering* journals; peer reviewer for 30+ journals including *Science* and *Nature* titles.
- **Panel Service:** Panelist for NSF Biomechanics and Mechanobiology Program, NSF Mechanics of Materials Program, NSF Materials Engineering and Processing Program, NSF Design of Engineering Material Systems Program, NSF Structural Materials and Mechanics Program, NSF DMREF Program, NIH Predictive Multiscale Models for Biomedical, Biological, Behavioral, Environmental and Clinical Research (U01; External Proposal Reviewer for NSF EPSCoR, DOE Biomolecular Materials Program, NSF SSE SI2 Program.
- **Invited/Keynote/Plenary Lectures:** 50+ 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. AFFILIATIONS

(1) Graduate and Postdoctoral Advisors

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

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

(2) 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. Amit Singh, Dr. Wenjie Xia, Dr. Yao Zhang.

Doctoral Students

5 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), Dr. Robert Sinko (ME, now Assistant Professor of Mechanical Engineering at Northern Illinois University).

9 current PhD Students: Xin Qin (TAM), Zhaoxu Meng (CEE), Elizabeth DeBenedictis (ME), Danielle Ma (ME), Nitin Krishnamurthy (ME), Kerim Can Dansuk (ME), Ao Wang (ME), Martha Dunbar (ME), Jenny Liu (ME, MSTP).

Undergraduate Researchers: 19 advised at NU since 2010.