



Samya Sen, Ph.D.

Postdoctoral Scholar, Materials Science and Engineering

 Curriculum Vitae available Online

Bio

BIO

Dr. Samya Sen is a Postdoc in the Appel Lab at Materials Science and Engineering. He earned his doctorate in mechanical engineering from University of Illinois Urbana-Champaign with Prof. Randy H. Ewoldt. His main research interests are soft materials, rheology, and non-Newtonian fluid mechanics. His current focus is studying the rheology of and developing novel hydrogels for biomedical applications.

STANFORD ADVISORS

- Eric Appel, Postdoctoral Faculty Sponsor

LINKS

- Google Scholar: https://scholar.google.com/citations?hl=en&user=Eznqw3cAAAAJ&view_op=list_works&gmla=AJsN-F5UbpSkCpVA416aJfKTfCjJlx0WTb5OodVoWH_GMoEIB5alqfUx2H2dhiiFipLCh6ilXT1am_-RQ7V6KOsjKOQpxPSFghFCDUN8ozzz0mqGCckvEs
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Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Samya's research interests are primarily soft materials and complex fluids. He uses experimental techniques of fundamental rheology in conjunction with non-Newtonian fluid mechanics to model, characterize, design, and understand soft material behavior. The applications of his research range from yield-stress fluid design in consumer products, industrial materials, and wildfire suppression. His current research projects as a postdoctoral researcher with Prof. Appel is in the rheological of novel hydrogels for biomedical applications, including improved drug delivery. His focus is on developing transient, stimuli-responsive materials with tunable mechanical and mass transport properties which can be tuned in situ and in vitro for controlled drug-release profiles. He also works on mathematical modeling of mass transport, structural evolution, and constitutive behavior of polymeric and colloidal materials in the context of soft biomaterials.

LAB AFFILIATIONS

- Eric Appel, Supramolecular Biomaterials (9/6/2022)

Publications

PUBLICATIONS

- **Biomimetic Non-ergodic Aging by Dynamic-to-covalent Transitions in Physical Hydrogels.** *ACS applied materials & interfaces*
Sen, S., Dong, C., D'Aquino, A. I., Yu, A. C., Appel, E. A.

2024

- **Soft glassy materials with tunable extensibility.** *Soft matter*

Sen, S., Fernandes, R. R., Ewoldt, R. H.

2023

- **Thixotropic spectra and Ashby-style charts for thixotropy** *JOURNAL OF RHEOLOGY*

Sen, S., Ewoldt, R. H.

2022; 66 (5): 1041-1053

- **Thixotropy in viscoplastic drop impact on thin films** *PHYSICAL REVIEW FLUIDS*

Sen, S., Morales, A. G., Ewoldt, R. H.

2021; 6 (4)

- **Rheology of fibre suspension flows in the pipeline hydro-transport of biomass feedstock** *BIOSYSTEMS ENGINEERING*

Faghani, A., Sen, S., Vaezi, M., Kumar, A.

2020; 200: 284-297

- **Viscoplastic drop impact on thin films** *JOURNAL OF FLUID MECHANICS*

Sen, S., Morales, A. G., Ewoldt, R. H.

2020; 891

- **Base-triggered self-amplifying degradable polyurethanes with the ability to translate local stimulation to continuous long-range degradation** *CHEMICAL SCIENCE*

Xu, Y., Sen, S., Wu, Q., Zhong, X., Ewoldt, R. H., Zimmerman, S. C.

2020; 11 (12): 3326-3331

- **Acid-Triggered, Acid-Generating, and Self-Amplifying Degradable Polymers** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*

Miller, K. A., Morado, E. G., Samanta, S. R., Walker, B. A., Nelson, A. Z., Sen, S., Tran, D. T., Whitaker, D. J., Ewoldt, R. H., Braun, P. V., Zimmerman, S. C.

2019; 141 (7): 2838-2842