

Center for Dynamics and Control of Materials: *MRSEC Seminar*

Hierarchical stress transmission, rheology, and failure of particulate gels

Thursday, April 18th, 9:30 am-10:30 am

Texas Innovation Center, EER 2.518 – Same time and place as the IRG 1 meetings!

<https://utexas.zoom.us/j/98179965342>

Particulate gels include materials we can eat, squeeze or 3D print, from foods to bio-inks to cement hydrates. Designing adaptive functions and performances requires gaining insight into the microstructural origin of the broad range of their rheological responses. Varying gelation processes and conditions can favor or not the development of various types of mechanical heterogeneities, where rigid structures coexist with, or are interspersed in, floppy or softer regions. The presence of such mechanical heterogeneities underlies the complex viscoelastic response of these materials, promotes and enhances stress localization under load, controlling reconfigurability, yielding, stiffening or failure. Recent computer simulations have shed new light onto the hierarchies of timescales and lengthscales involved in these processes, and onto the implications for stress transmission and redistribution.



Emanuela Del Gado received her undergraduate degree at the University of Naples "Federico II" in Italy, where she also obtained a PhD in Physics in 2001. She was a Marie Curie Fellow at the University of Montpellier in France and a post-doctoral researcher at ETH Zurich in Switzerland. Before joining Georgetown University 2014, Emanuela was a Swiss National Science Foundation (SNSF) Assistant Professor at ETH Zurich. In 2016 and 2018 she was awarded a Chair Joliot and a Paris Science Chair at ESPCI Paris. In 2017 she became Georgetown University Provost's Distinguished Associate Professor and was MIT - CEE C.C. MEI Distinguished Speaker. She is a Fellow of the Royal Society of Chemistry since 2018 and was elected Fellow of the American Physical Society in 2020.

Emanuela Del Gado, PhD

