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**Joshua Ballew\*** ([jballew@andrew.cmu.edu](mailto:jballew@andrew.cmu.edu)), Carnegie Mellon University, Department of Mathematical Sciences, 5000 Forbes Ave, Pittsburgh, PA 15213, and **Konstantina Trivisa** ([trivisa@math.umd.edu](mailto:trivisa@math.umd.edu)), University of Maryland, College Park, Department of Mathematics, College Park, MD 20742. *Well-Posedness for Systems of Fluid-Particle Interaction.*

The Navier-Stokes-Smoluchowski and Euler-Smoluchowski systems model the interaction of particles interacting with a viscous or inviscid compressible fluid, respectively. In this talk, a weak-strong uniqueness result for the Navier-Stokes-Smoluchowski system in three spatial dimensions is presented. This result depends upon an admissibility criterion of a relative entropy inequality comparing the energies of a weak solution and a potential smooth solution. For a simplified version of the Euler-Smoluchowski model in three spatial dimensions, the existence of multiple weak solutions is shown using the techniques of convex integration. A weak-strong uniqueness result when the model also has an energy inequality is also presented. (Received September 10, 2016)