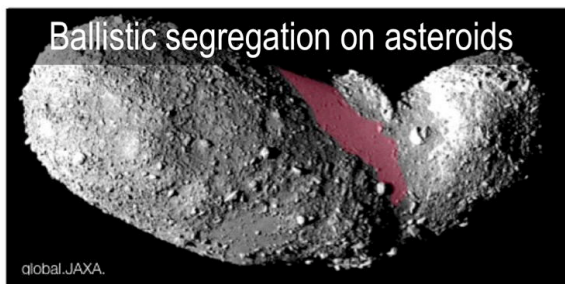
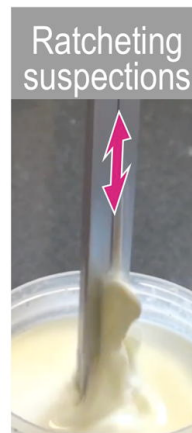
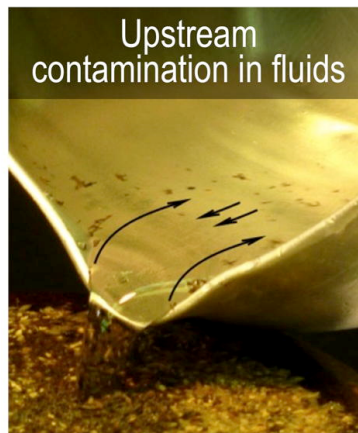


## Against the current: 3 example of paradoxical flows

Prof. Dr. Troy Shinbrot

Department of Biomedical Engineering, Rutgers School of Engineering, The State University of New Jersey



In this talk, I describe 3 counterintuitive behaviors in simple physical systems. First, I describe experiments showing that small particles climb up a waterfall to contaminate a clean reservoir upstream. Second, I describe climbing of shear thickening fluids up a vibrating rod. And third, I describe separation on fine grains from large boulders on asteroids. All of these behaviors are surprising and counterintuitive, and all follow from mathematical and physical behaviors that have been known for decades, but have only recently been rediscovered.