

Title: Simulations of Diatom Chains in Shear Flow

Hoa Nguyen, Ashley Young, Lee Karp-Boss, Peter Jumars and Lisa Fauci

Abstract: When a diatom chain is suspended in shear flow at low Reynolds number, it may experience different types of rotations as observed in experimental work on fiber motions. We use the immersed boundary method to validate two important issues: 1) in drag calculations, the spring stiffness constant of our elastic model actually represents the bending modulus of the diatom chains in vivo and 2) our simulations of diatom chains in shear flow agree with experiments found in the literature of fiber suspension. From this study, we want to examine the effects of varying background flows on several model diatom chains.