Textured boundaries and their effects on ciliary locomotion
SAIKAT JANA, Department of Engineering Science and Mechanics, Virginia Tech, SUNG YANG, Department of Nanosystems and Engineering, GIST, South Korea, SUNGHWAN JUNG, Department of Engineering Science and Mechanics, Virginia Tech — Many microorganisms in nature propel themselves by creating coordinated motion of the cilia and often interact with each other through hydrodynamic interactions. We study the behavior of these organisms near boundaries of different topography and rationalize the hydrodynamic effects involved. Various geometries like wavy, rough or solid walls are simulated using micro fabrication and their effects on the locomotory traits are observed. Finally a comprehensive discussion on the effect of different boundaries on the swimming characteristics of the organism is presented.