1106-VL-1895 **Muhammad Irfan Hameed*** (mhameed@uscupstate.edu), Department of Mathematics, University of South Carolina Upstate, 800 University Way, Spartanburg, SC 29303. *Simplified Mathematical Model of Neck Formation and Breakup of a Slender Fluid Jet.*

The influence of surfactant on the breakup of a periodic fluid jet of low viscosity immersed in highly viscous exterior fluid at low Reynolds number is presented. Evolution equations for the jet interface and surfactant concentration are derived using long wavelength approximations. These one dimensional partial differential equations are solved numerically for given initial interface and surfactant concentration. It is found that the presence of surfactant at the interface retards the pinch-off process. The influence of various physical effects on the breakup process is also investigated. The influence of surface diffusion of surfactant on the thread deformation is studied by varying surface Peclet number. It is found that greater diffusion of surfactant causes the jet to pinch faster. Surfactant solubility is found to have similar effect. Results of the long wavelength model are also compared against the numerical simulations of the full problem. The solution of the full problem shows similar behavior to the simplified model. (Received September 15, 2014)