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Grigor Nika* (gnika@wpi.edu), 100 Institute Rd, Worcester, MA 01609, and **Bogdan Vernescu**. *Effective properties of two phase flows with non uniform surface tension.*

In this study we are interested in a problem of dilute emulsions of two immiscible viscous fluids, in which one is distributed in the other in the form of droplets of arbitrary shape, with non-uniform surface tension due to surfactants. The problem includes an essential kinematic condition on the droplets. In the periodic homogenization framework, it can be shown using Mosco-convergence that, as the size of the droplets converges to zero faster than the distance between the droplets, the emulsion behaves in the limit like the continuous phase. Here we determine the rate of convergence of the velocity field for the emulsion to that of the velocity for the one fluid problem and in addition, we determine the corrector in terms of the bulk and surface polarization tensors. (Received June 03, 2015)