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**Di Kang\*** (di.kang@cgu.edu), **Ali Nadim** and **Marina Chugunova**. *Modeling of the pulmonary surfactant dynamics in alveoli.*

We derive a new model of the alveoli compartment, taking into account pulmonary surfactant production and recycling by type II cells as well as its degradation. As the thickness of alveoli coating is much smaller than the average radius of the alveoli, we employ the classical lubrication approximation to describe the thin liquid film dynamics in the presence of the pulmonary surfactant, which is a surface tension reducing agent and thus prevents the lungs from collapse. In the lubrication limit, we derive a degenerate system of two coupled parabolic partial differential equations that describe the time evolution of the thickness of the coating film inside the alveoli together with that of the surfactant concentration at the interface. We present numerical simulations using parameter values consistent with experimental measurements. (Received September 25, 2017)