

Abstract Submitted
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Multiscale modelling of Flow-Induced Blood Cell Damage YALING LIU, SALMAN SOHRABI, Lehigh University — We study red blood cell (RBC) damage and hemolysis at cellular level. Under high shear rates, pores form on RBC membranes through which hemoglobin (Hb) leaks out and increases free Hb content of plasma leading to hemolysis. By coupling lattice Boltzmann and spring connected network models through immersed boundary method, we estimate hemolysis of a single RBC under various shear rates. The developed cellular damage model can be used as a predictive tool for hydrodynamic and hematologic design optimization of blood-wetting medical devices.

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