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Effects of Fibrinogen on RBC Aggregation and Rouleux Formation[1] DMITRY FEDOSOV, Forschungszentrum Juelich, WENXIAO PAN, Pacific Northwest National Lab, BRUCE CASWELL, Brown University, GERHARD GOMPPER, Forschungszentrum Juelich, GEORGE KARNIADAKIS, Brown University — We employ dissipative particle dynamics (DPD) to study human blood rheology. Specifically, using a multi-scale (MS-RBC) and low-dimensional model (LD-RBC) for modeling red blood cells (RBCs), we study the role of fibrinogen inter-cellular forces in the formation of rouleaux structures at low shear rates. In particular, both models verify that RBC aggregation into rouleaux determines non-Newtonian response and they also predict a non-zero yield stress whose value depends on the fibrinogen concentration.

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