

Abstract Submitted
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Modeling of Endothelial Glycocalyx via Dissipative Particle Dynamics MINGGE DENG, Univ. of Science & Technology of China and Brown University, HAOJUN LIANG, Univ. of Science & Technology of China, GEORGE KARNIADAKIS, Brown University — We employ Dissipative Particle Dynamics (DPD) to simulate flow in small vessels with the endothelial glycocalyx attached to the wall. Of particular interest is the quantification of the slip velocity at the edge of glycocalyx and of the increased pressure drop at different crafting densities, stiffness and height of the glycocalyx. Results will be presented for capillaries and small arterioles, and interactions with discrete red blood cells will be included in the modeling. In addition to the physical insight gain for this important but relatively unexplored bioflow, simple models for the slip velocity will be proposed that can be used in continuum simulations of blood flow in micro-vessels.

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