11th World Congress on Computational Mechanics (WCCM XI)
5th European Conference on Computational Mechanics (ECCM V)
6th European Conference on Computational Fluid Dynamics (ECFD VI)
July 20–25, 2014, Barcelona, Spain

NEW INFLOW/OUTFLOW BOUNDARY CONDITIONS FOR PARTICLE-BASED MODELING OF SUSPENSION FLOWS IN NETWORKS

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Key words: *Boundary conditions, Particle methods, DPD, Flow simulation, Red blood cell.*

Suspension flows in networks with complex geometry are ubiquitous in nature. Due to complexity of modeling suspension by using continuous models, particle based methods are gaining popularity. In networks with multiple inlets and outlets, the inflow and outflow boundary conditions are necessary to carry numerical simulations. In particular, new particles must be created at the inflows and accurately deleted at the outflows. We developed a new method to impose inflow and outflow boundary conditions, which allows simulations of suspensions of rigid and deformable particles in networks with arbitrary geometry. We present the application of the method to simulations of the dense suspension of red blood cells in parts of the microvascular network. Dissipative Particle Dynamics (DPD) method is used for discretizing the flow.