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Modeling electrokinetic flow by Lagrangian particle-based method WENXIAO PAN, Pacific Northwest National Laboratory, KYUNGJOO KIM, MAURO PEREGO, Sandia National Laboratory, ALEXANDRE TARTAKOVSKY, Pacific Northwest National Laboratory, MIKE PARKS, Sandia National Laboratory — This work focuses on mathematical models and numerical schemes based on Lagrangian particle-based method that can effectively capture mesoscale multiphysics (hydrodynamics, electrostatics, and advection-diffusion) associated in applications of micro-/nano-transport and technology. The order of accuracy is significantly improved for particle-based method with the presented implicit consistent numerical scheme. Specifically, we show simulation results on electrokinetic flows and microfluidic mixing processes in micro-/nano-channel and through semi-permeable porous structures.

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