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Shape-based Particle Separation via Elasto-Inertia Pinched Flow Fractionation (eiPFF) XINYU LU, XIANGCHUN XUAN, Clemson University — We report in this talk a continuous-flow shape-based separation of spherical and peanut-shaped rigid particles of equal volume via elasto-inertial pinched flow fractionation (eiPFF). This separation exploits the shape-dependence of the cross-stream particle migration induced by the elaso-inertial lift force in viscoelastic fluids. The parametric effects on this separation are systematically investigated in terms of dimensionless numbers. It is found that this separation is strongly affected by the Reynolds number, Weissenberg number and channel aspect ratio. Interestingly, the elasto-inertial deflection of peanut particles can be either greater or smaller than that of spherical particles.

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