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Kun Zhao* (kzhao@tulane.edu). *Global Well-posedness of the Cahn-Hilliard-Brinkman Equations in Critical Space.*

The Cahn-Hilliard-Brinkman equations is a coupled PDE system describing phase separation of binary fluids in porous media. A heuristic argument shows that the global well-posedness is critical in \mathbb{R}^4 in the sense of scaling-invariance against free energy, while the problem is sub-critical in \mathbb{R}^d for $d = 1, 2, 3$. In this talk, I will present some recent results concerning the global well-posedness and long-time behavior of classical solutions to an initial-boundary value problem of the model in \mathbb{R}^4 . (Received July 18, 2017)