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**Kun Zhao\*** (kzhao@tulane.edu). *Global dynamics of 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 September 08, 2016)