Abstract Submitted
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Intercalation dynamics in rechargeable batteries[1] LIAM STANTON, Northwestern University, MARTIN BAZANT — We consider the ion intercalation of rechargeable battery electrode particles during charging (or discharging). We have developed a general phase-field model which incorporates entropic, enthalpic and elastic effects within the particle as well as the nonlinear chemical reactions at the particle- electrolyte interface. It is shown through linear stability analysis and numerical simulations that particle size and elastic effects will decrease or even eliminate both the spinodal region and the miscibility gap in the phase diagram.

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