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Charles W. Monroe and **M. Zyskin*** (maxim.zyskin@eng.ox.ac.uk). *Continuum and microscopic models of electrochemical transport.*

Recently a thermodynamics-based continuum model of multi-species electrochemical transport has been proposed by Goyal and Monroe. For a low-density gas, we will derive those continuum balance laws and a dissipation function expressing the rate of entropy production from a microscopic statistical theory based in the Boltzmann gas equation. The approach allows direct computation of parameters for the macroscopic continuum model in the case where particle/particle interactions are described by a microscopic pair potential of the Lennard–Jones type. In addition to this illustrative example, we will discuss the linkage between microscopic and macroscopic models in other cases where present knowledge is incomplete. (Received September 17, 2019)