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Role of Solution Conductivity in Reaction Induced Charge Auto-Electrophoresis JEFFREY MORAN, JONATHAN POSNER, University of Washington — The self-propelled motion of bimetallic particles in hydrogen peroxide solutions has been widely investigated. Multiple studies have predicted or reported that the swimming speed of these particles scales inversely with solution conductivity. We use scaling analyses and simulations to investigate the physical mechanism for the conductivity-induced deceleration. In particular, we focus on the interaction between dipolar charge density in the fluid surrounding the rod and the electric field it generates, which is weakened by the addition of electrolyte. The simulations show good agreement both with experimental data and with previous analytical treatments of the conductivity dependence.

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