Dissolution of a solid particle in a linear velocity field in the presence of chemical reactions[1] DONNA BLACKMOND, DEVIN CONROY, OMAR MATAR, Imperial College London — The growth or dissolution rate of a particle in a steady linear velocity field is investigated. The particle contains a pure composition of species D and the outer liquid contains species D and L which undergo a reversible reaction. The governing equations are solved asymptotically in the limit of a small Reynolds number based on a particle length scale, with the Prandtle number of order one and a large Schmidt number. We explore the rate of growth or dissolution as a function of the particle curvature, Stefan number, Reynolds number and a scale for the concentration difference.

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