

self-diffusion coefficient

The diffusion coefficient D_i^* of species i in the absence of a chemical potential gradient. It is related to the diffusion coefficient D_i by

$$D_i^* = D_i \frac{\partial(\ln c_i)}{\partial \ln a_i}$$

where a_i is the activity of i in the solution, and c_i is the concentration of i . If an isotopically labelled species (i^*) is used to study diffusion, the tracer diffusion coefficient, D_i^* , is practically identical to the self-diffusion coefficient provided that the isotope effect is sufficiently small.

Source:

PAC, 1972, 31, 577 (*Manual of Symbols and Terminology for Physicochemical Quantities and Units, Appendix II: Definitions, Terminology and Symbols in Colloid and Surface Chemistry*) on page 617