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ESR Studies of a Reorienting Nickel Complex BRUCE KOWERT, St. Louis University — Electron spin resonance spectra of the planar bis(maleonitriledithiolato)nickel anion radical (BMNT) in the intermediate motional region have been simulated in several polar solvents using axially symmetric reorientation. The rotational diffusion about the long in-plane axis is three to four times faster than that about the two axes perpendicular to it. The reorientational model needed to produce agreement with experiment is either in or close to the Brownian rotational diffusion limit. The solvents are 4-allyl-2-methoxyphenol (eugenol), dimethyl phthalate, tri-*n*-butyl phosphate, tris(2-ethyl-hexyl)phosphate, and 2-methoxyethyl ether (diglyme), ethyl alcohol, and a dimethylformamide-chloroform mixed solvent. The reorientational rates from the simulations are in general agreement with those from line width analyses carried out from the fast to the slow motional regions. The temperature dependence of the diffusion rates is discussed in terms of the Stokes-Einstein-Debye (SED) model and the Vogel-Tammann-Fulcher equation.

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