Abstract Submitted
for the PSF13 Meeting of
The American Physical Society

Diffusion of Squalene in n-alkanes and squalane BRUCE KOWERT, St. Louis University — Squalene, an intermediate in the biosynthesis of cholesterol, has a 24-carbon backbone with six methyl groups and six isolated double bonds. Capillary flow techniques have been used to determine the translational diffusion constant, D, of squalene at room temperature in several nonpolar solvents; they include squalane, n-hexadecane, and three n-octane-squalane mixtures. Values of r, squalene's hydrodynamic radius, are calculated from the Stokes-Einstein relation and decrease as the viscosity increases. These solvent-dependent r values are a consequence of the relative sizes of squalene and the solvents. The Stokes-Einstein limit assumes the solute is much larger than the solvent; this is not the case for our solutions. A number of n-alkane solutes diffusing in n-alkane solvents also have r values that decrease as the viscosity increases. The r values for squalene and these n-alkanes have a common dependence on the ratio of the solvent's van der Waals volume to that of the solute probe. The translational motion of squalene appears to be similar to that of n-alkane solutes with similar chain lengths diffusing in n-alkane solvents; n-tetracosane is an example.

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Date submitted: 09 Oct 2013 Electronic form version 1.4