



Figure 8.2 Solubilization rate of oils as a function of $C_{12}EO_6$ concentration; open circles, tetradecane; solid circles, n -nonane.

1. Diffusion of oil into water is related to the water solubility of the oil $C_{o,w}$ as

$$\text{Rate} = \frac{D_{o,w} C_{o,w}}{\delta} \quad [2]$$

where $D_{o,w}$ is the diffusion coefficient of the oil and δ is the diffusion layer thickness (Fig. 3). This mechanism was shown to be significant (3) only for oils with solubilities in water greater than about 10^{-6} wt%.

2. A process that is limited by the rate of micellar diffusion to the oil-water interface with mass transfer of oil to micelle.

The rates of solubilization predicted on this mechanism are also too high compared with the experimentally observed values for wa-