SUPPLEMENTARY MATERIAL

Mass partitioning effects in diffusion transport

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I. Nanoparticle characteristics

Full characterization of the polymer nanoparticles, including average size, size distribution, and zeta potential, can be found in the previously published work [1]. Briefly, resulting nanoparticles were monodisperse, averaging 105 nm in thickness with a shell approximating 40 nm. The average zeta potential of the nanoparticles was found to be approximately 25 mV.

II. General model.

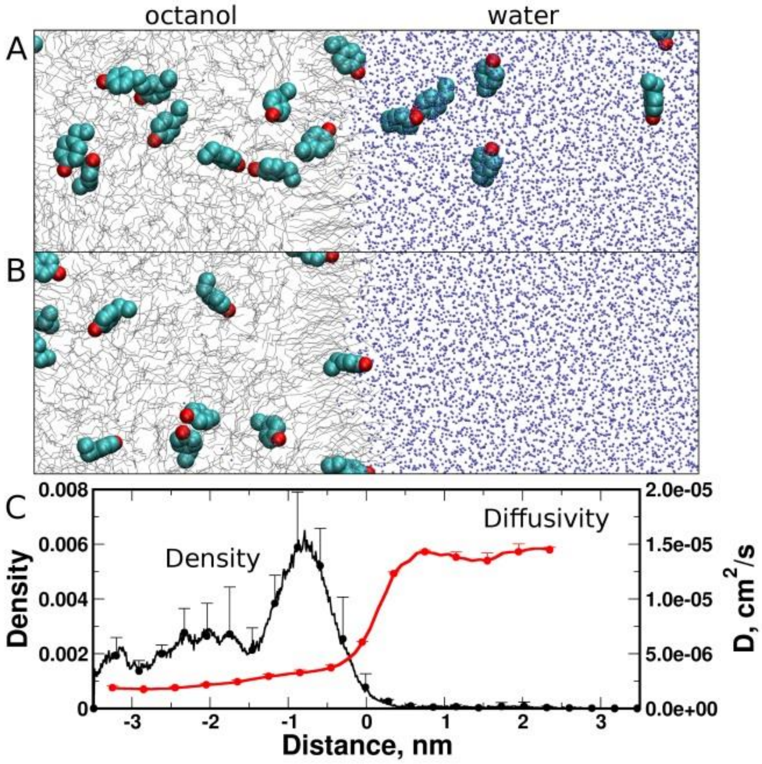

Figure S1. Interplay of diffusivity and partitioning in mass distribution. The redistribution of a hydrophobic molecule (p-ethylphenol) across octanol/water system; the representative snapshots of the initial (**A**) and final (**B**) configurations after 20 ns from MD simulations. The calculated density and diffusivity distributions of *p*-ethylphenol across octanol/water phases (**C**).

III. Parameter space

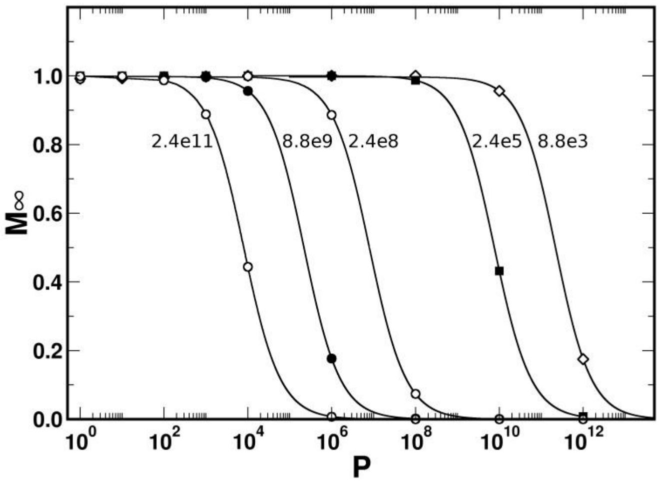

Figure S2. Dependence of maximum released mass on partitioning at different concentrations of nanoparticles (*number in in the figure, units mL*$^{-1}$) in logarithmic scale.

References:

[1] G. U. Ruiz-Esparza, S. Wu, V. Segura-Ibarra, F. E. Cara, K. W. Evans, M. Milosevic, A. Ziemys, M. Kojic, F. Meric-Bernstam, and M. Ferrari, Adv. Funct. Mater. (2014).