

Caption list:

Movie 1: The simulation of Advection-Nernst-Planck equation (2.1) with $Pe = 2$ and the following initial conditions, diffusivities and valences,

$$c_{I,1} = c_{I,2} = \frac{e^{-\frac{1}{2}\left(\frac{x}{\sigma}\right)^2}}{\sigma\sqrt{2\pi}}, \quad \sigma = \frac{1}{4}, \quad \kappa_1 = 1, \kappa_2 = 0.1, \kappa_3 = 1, z_1 = 1, z_2 = 1, z_3 = -2. \quad (78)$$

Movie 2: The simulation of the Advection-Nernst-Planck equation (2.1) with $Pe = 8$, utilizing identical initial conditions, diffusivities, and valences as those employed in the previous case.