

Parameter Space Study on the Swelling Kinetics of Polyelectrolyte (PE) Gels

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The effects of parameters on the phenomenon of swelling kinetics of spherical polyelectrolyte (PE) gels is explored in the limit of small deformation for both fixed and variable charge cases. Here we consider how charge i.e. the degree of ionization, solvent quality, density of crosslinkers affect the PE gels undergoing an isothermal swelling. We also qualitatively estimate the variation of the swelling relaxation time as well as the response function (PE gel bulk modulus) with all the previously mentioned parameters. Results show good agreement with experimental observations.

References:

1. Sen, S.; Kundagrami, A. *J. Chem. Phys.* **2015**, 143, 224904-15.
2. Sen, S.; Kundagrami, A. *submitted to J. Chem. Phys.*