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Salt-induced phase transitions in charged polymerized membranes ANGELO CACCIUTO, ERIK LUIJTEN, Department of Materials Science and Engineering and Frederick Seitz Materials Research Laboratory, University of Illinois at Urbana-Champaign — We study the behavior of charged, fully polymerized membranes in the presence of multivalent salt by means of molecular dynamics simulations. At moderate salt concentrations the interplay between the electrostatic interactions and the in-plane elasticity of the membrane gives rise to a novel multi-step folding transition pathway that is qualitatively different from the folding induced by generic attractive interactions at low temperatures. Furthermore, the number of folds in the membrane is greatly reduced when the salt concentration exceeds a critical value, indicating a reentrant transition. Both observations can be viewed as the two-dimensional counterpart of the behavior displayed by flexible linear polyelectrolytes in multivalent salt solutions [1].

[1] P.-Y. Hsiao and E. Luijten, Phys. Rev. Lett. 97, 148301 (2006).

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