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Conformation of polystyrene sulfonate (PSS) and its origin of counterion distribution[1] SHUANGJIANG LUO, QINGBO YANG, JIANG ZHAO, Institute of Chemsitry, Chinese Academy of Sciences, LABORATORY OF POLYMER PHYSICS AND CHEMISTRY TEAM — The hydrodynamic radius and electric potential of single chains of polystyrene sulfonate (PSS) is studied, as a function of the molecular weight, by single molecule fluorescence techniques - fluorescence correlation spectroscopy (FCS) and photon count histogram (PCH). The results show different scaling law for low and high molecular weight. When the chain is short (N<300), the scaling power index is about unity, indicating a rod-like conformation, while the index changes to 0.58 when the chain gets longer (N>300), indicating a random coil conformation. The electric potential of the single PSS chains is determined and the results clearly show the decrease of the effective charge density with the increase of molecular weight. The results indicate that the charged chain has increased extent of counterions binding at longer chain length, and therefore takes different conformation.

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