

Abstract Submitted  
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**On the effective charge of hydrophobic polyelectrolytes** ELIE RAPHAEL, UMR CNRS Gulliver 7083, ESPCI, 10 rue Vauquelin, 75005 Paris, France, ALEXEI CHEPELIANSKII, Laboratoire de Physique des Solides, UMR CNRS 8502, Bat. 510, Université Paris-Sud, 91405 Orsay, France, FARSHID MOHAMMAD-RAFIEE, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan 45195, P.O. Box 45195-1159, Iran — In this paper we analyze the behavior of hydrophobic polyelectrolytes. It has been proposed that this system adopts a pearl-necklace structure reminiscent of the Rayleigh instability of a charged droplet. Using a Poisson-Boltzmann approach, we calculate the counterion distribution around a given pearl assuming the latter to be penetrable for the counterions. This allows us to calculate the effective electric charge of the pearl as a function of the chemical charge. Our predictions are in very good agreement with the recent experimental measurements of the effective charge by Essafi et al. (Europhys. Lett. 71, 938 (2005)). Our results allow to understand the large deviation from the Manning law observed in these experiments.

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