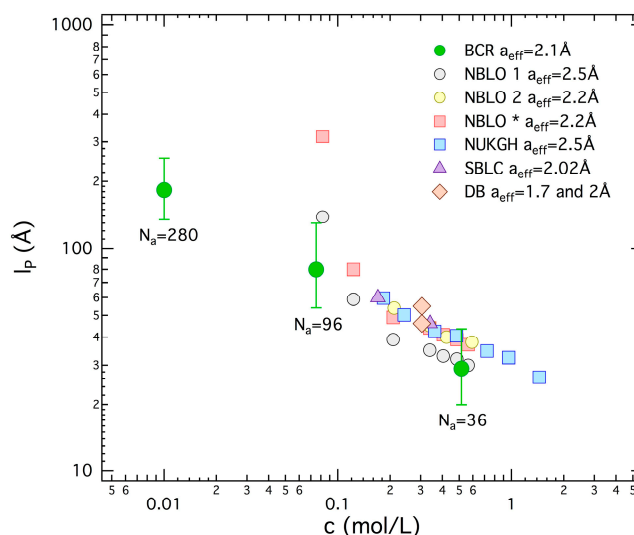
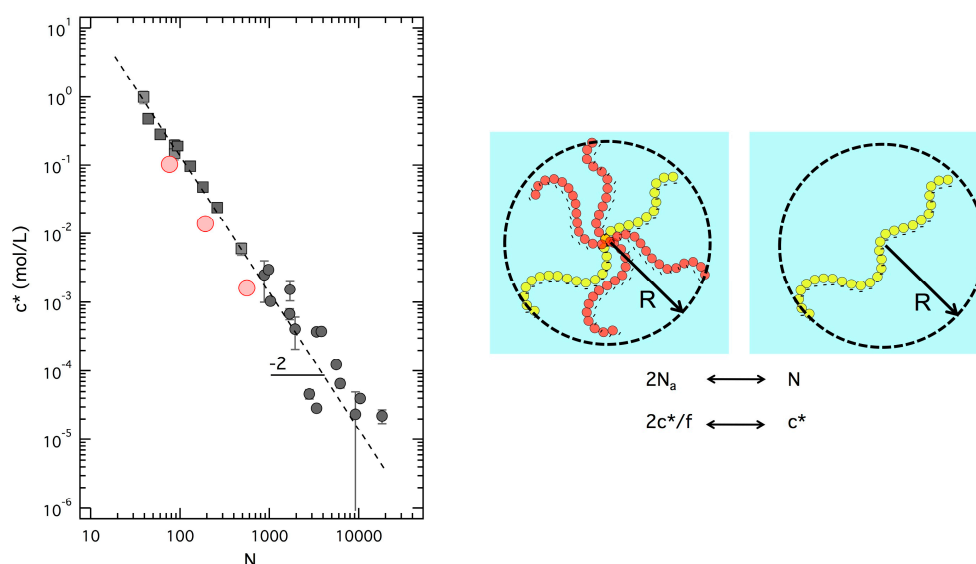


# Supplementary Materials: SANS from Salt-Free Aqueous Solutions of Hydrophilic and Highly Charged Star-Branched Polyelectrolytes

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**Figure S1.** Comparison between the values of  $l_p$  obtained from the values of  $R = \pi/q_1^*$  at  $c^*$  using the wormlike chain model in this paper (noted BCR, Boué-Combet-Rawiso) and the values found in the literature for linear NaPSS solutions. The effective size of the repeat unit  $a_{eff}$  is also indicated. NBLO 1 and NBLO 2: Nierlich-Boué-Lapp-Oberthur [1]; NBLO\*: Nierlich-Boué-Lapp-Oberthur [2]; NUKGH: Nishida-Urakawa-Kaji-Gabrys-Higgins [3]; SBLC: Spiteri-Boué-Lapp-Cotton [4]; DB: Dubois-Boué [5] (see References below).



**Figure S2.** Our three values of  $c^*$  (dotted red circles) are plotted versus  $N$  (degree of polymerization) on a figure regrouping literature data for different linear NaPSS solutions (Colby *et al.*, Ref. [50] of the paper). Since the architectures are different for linear and star PEs, couples  $(c^*, N$  or  $N_a)$  cannot be compared directly. To adapt our results to that of linear PEs, we only consider two different arms in the star forming a linear segment of degree of polymerization  $2N_a$  (yellow part of the star). The corresponding monomer concentration (and therefore, the equivalent overlap concentration for linear chains) is given by  $2c^*/f$ .

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