

# Reversible encapsulation of large colloids by oppositely charged small colloids

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We report the first example of reversible encapsulation of micron-sized large colloids by oppositely charged submicron small colloids. The reversibility is achieved by introducing a pH-responsive layer onto the small colloids. The layer consists of a mixture of polyacrylic acid and polystyrene, and its influence on the encapsulation behavior of small colloids is studied as a function of the ionic strength and pH of the solvent. We observe reversible encapsulation of large colloids by small colloids upon cycling the pH. Furthermore, the surface coverage of the smaller colloids on the surface of the large colloids is tunable by pH. An explanation based on DLVO-theory is provided to further understand the reversible encapsulation mechanism.