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Structure and Assembly of Polymeric Dots Formed by Conjugated Polymers NARESH OSTI, DILRU RATNAWEERA, THUSITHA ETEMPAWALA, UMESH SHRESTHA, DVORA PERAHIA, Clemson University — Rigid conjugated polymers assume extended conformation in dilute solution and often behave as colloidal suspensions. When forced into a collapsed configuration, they form highly fluorescing particles, or poly-dots, which have demonstrated potential as intracellular imaging markers, as well as building blocks for light harvesting devices. The current work investigates the structure and stability of poly-dots of *di-alkyl para polyphenyleneethynylene* (PPE) conjugated polymers in solution and follows their assembly at interfaces. Small angle neutron scattering measurements of the poly-dots in water have shown that at low concentrations, stable unimolecular spherical poly-dots are formed with a polydispersity that corresponds to that of the polymer itself. With increasing concentration, yet, below the critical micelle concentration of these rod-like polymers in good solvents, the size and density of the NPs increases, however the spherical symmetry is retained. The nature and length of the substituents affect the internal density and the degree of swelling of the poly dots. Atomic Force Microscopy results show that these PPE poly-dots assemble into arrays with different symmetries, depending on molecular parameters and assembly conditions.

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