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Effects of Substitutes on the Self-Assembling of Rigid Polymers YUNFEI JIANG, DVORA PERAHIA, Chemistry Department, Clemson University, Clemson, SC, 29634, UWE H.F. BUNZ, School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA 30332 — Beyond the basic understanding of the assembly process of highly conjugated rigid polymers, these macromolecules are inherently semiconductors and may be used as molecular wires with the appropriate doping. In device applications, the molecules have to be in contact with either an interface or other molecules. In an effort to correlate the elctro-optical properties of substituted poly(para phenyleneethynylene) (PPE), we have recently shown that PPE substituted by short alkyl chains, associate to form flat aggregates in solutions of toluene as well as at interfaces. With increasing concentration in solution, these aggregates form fragile gels. The shape and size of the PPE aggregates as well as the overall phase diagrams are strongly dependent on molecular parameters and also on the environment in which the association takes place. AFM and small angle neutron scattering studies have shown that a bulky substitutent triisopropylsilyloxy changes the structure of the assembly, the nature of the gels and the morphology at interfaces.

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