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Rigid Polymers at Interface: Competition of Interfacial Forces and Molecular Architecture[1] SUPUN S MOHOTTALALAGE, DVORA PERAHIA, Clemson University — Confinement of conjugated polymers to spontaneously formed aggregates and nanoparticles is strongly affected by their rigid architecture and determines their photophysics through conformational constraints. Their rigid architecture dominates spontaneous assemblies, whereas in nanoparticles the polymer chains are forced into far-from-equilibrium conformations. For many of their applications, conjugated polymers reside at solid interfaces where interactions arising from the polymer architecture compete with interfacial effects. AFM and X-ray of highly rigid dialkyl poly (para-phenylene ethynylene)s (PPEs) at an interface as the films are solvent annealed in presence of toluene vapor are compared with thermal annealing. With increasing annealing time, larger aggregates are formed for both, dictated by the inherent polymer architecture. Solvent annealing affects selectively the backbone and the substituting size chains impact the internal packing at early exposure times. Solvents unlock the interfacial interactions, forming architecture dominated assemblies.

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