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Conjugated polymers are promising materials as lightweight and highly tailorable alternatives to traditional semiconductors, but their synthesis often produces toxic byproducts and uses solvents that are both non-renewable and energetically intensive to synthesize. Additionally, the resulting products are not readily degradable/recyclable so conjugated polymers would contribute to the global plastics pollution with widespread deployment. In this study, the dynamic equilibrium of azomethine bonds is exploited to synthesize novel degradable conjugated polymers while also minimizing the environmental impact of their synthesis. This is accomplished by; 1) the polymerization of dialdehyde dihydropyrrolopyrroles (DHPPs) with *p*-phenylenediamine via benign acid-catalyzed polycondensations, and 2) creating dibrominated azomethine-containing monomers synthesized through solid state chemistry that can be polymerized via robust Suzuki polycondensations. These resulting azomethine-containing polymers can then be degraded in the presence of acid, and this process is monitored with nuclear magnetic resonance (NMR) and UV-vis absorbance spectroscopies of polymers in dilute solutions. Utilizing either an acid-catalyzed polymerization method or solid-state chemistry for monomer preparation reduces the need for non-renewable solvents and lessens the environmental impact of creating conjugated polymers. Results from this study encourage the continued development of environmentally conscious polymerization protocols that do not sacrifice the utility or applicability of the resulting conjugated polymers.