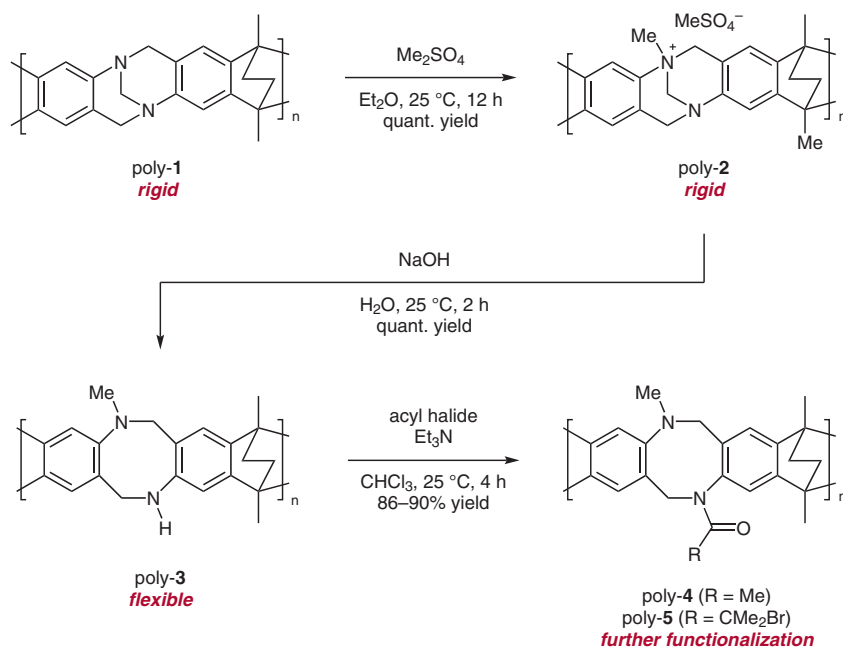


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Rigid-to-Flexible Conformational Transformation: An Efficient Route to Ring-Opening of a Tröger's Base-Containing Ladder Polymer

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Mission Accomplished: Synthesis of 'Flexible' Ladder Polymers



Significance: Ladder polymers are generally rigid because the repeating units are connected by two or more bonds. If 'flexible' ladder polymers were synthesized, they would be novel materials that have the potential to exhibit viscoelastic and dynamic properties in addition to their inherent, excellent thermal and mechanical properties. Herein, Ishiwari, Fukushima, and co-workers report the first example of the synthesis of a well-defined conformationally flexible ladder polymer.

Comment: The 'flexible' ladder polymer poly-3 was synthesized by an efficient ring opening of a rigid Tröger's base unit in the main chain of the polymer. ^1H NMR studies and gas-adsorption measurements of the polymers confirm the flexibility of poly-3. SEC-MALS profiles suggest that no breaking of the polymer main chain was observed in any of the reactions. Further functionalization of poly-3 can be achieved by acylation of the secondary amine moiety, which demonstrates the versatility of poly-3.

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