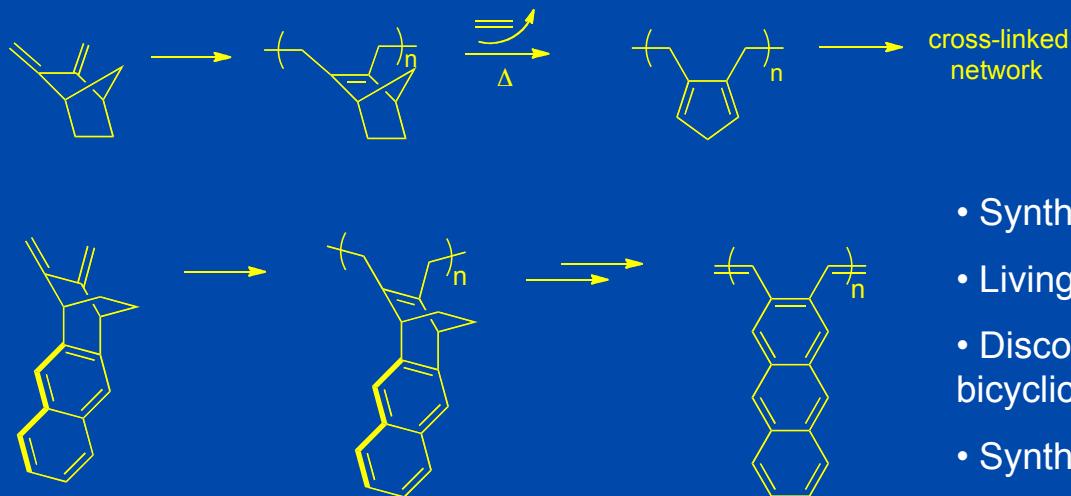


# Novel Routes to Well-Defined Conjugated Polymers

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Low cost, versatility, and ease of processability are the characteristics that semiconducting polymers are envisioned to bring to the field of electronic materials. New syntheses are necessary to provide conjugated polymers with well-defined structural parameters and allow their integration into complex devices. En route to this goal, we investigated polymerization of bicyclic dienes as precursors to conjugated polymers. We have discovered that these polymers can undergo a retro Diels-Alder reaction with a concurrent release of ethylene to produce new polymeric backbones. This transformation can be used to prepare thermally cross-linkable polymers, as well as conjugated polymers generated from soluble precursors at elevated temperatures. Our recent notable achievements include:



- Synthesis of new bicyclic diene monomers
- Living polymerization of bicyclic dienes
- Discovery of retro Diels-Alder reaction in bicyclic diene polymers
- Synthesis of thermally cross-linkable polymers
- Synthesis of polymers containing backbone furan and other aromatic functionalities