K. BECKER, P. G. LAGOUDAKIS, G. GAEFKE, S. HÖGER,* J. M. LUPTON* (UNIVERSITÄT BONN AND LUDWIG-MAXIMILIANS-UNIVERSITÄT, MÜNCHEN, GERMANY; UNIVERSITY OF UTAH, SALT LAKE CITY, USA)

Exciton Accumulation in π-Conjugated Wires Encapsulated by Light-Harvesting Macrocycles
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Category

Synthesis of Materials and Unnatural Products

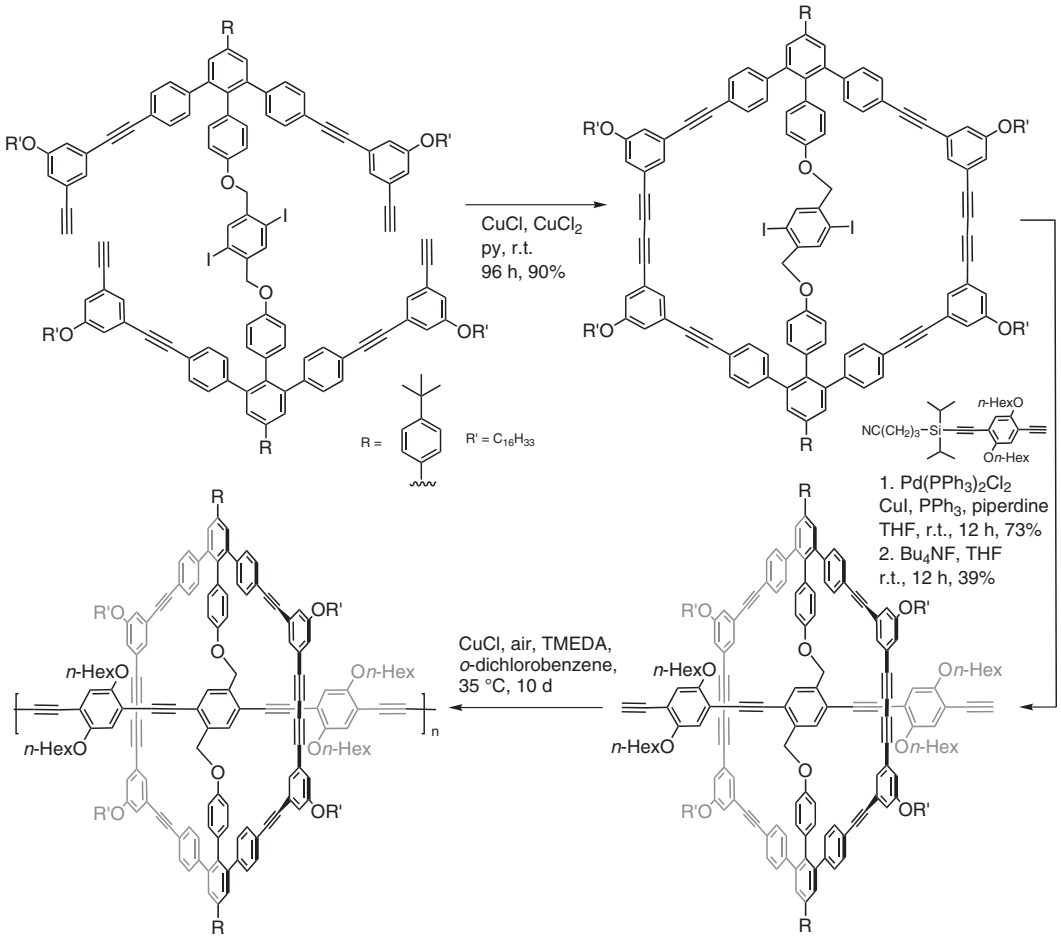
Key words

polymers

energy transfer

macrocycles

Energy Collection by a Polymer Shish Kabob



Significance: Future energy and photonic technologies will rely on the delivery of electronic excitations to a specific location. In addition to synthesizing an impressive structure, the authors demonstrate the use of geometrically fixed independent chromophores to create systems capable of having two excitations present at the same time. This leads to the annihilation of the excitations when they combine. Delivering multiple quanta of energy to reaction centers has long been of interest in the search for new photochemistry and physics.

Comment: The authors demonstrate that the collection of multiple photons is dependent on the molecular weight and that longer polymers can accumulate multiple excitations at lower laser pump powers than the shorter polymers. The molecular architecture is complex and is not likely to be widely emulated. However, this report will serve to guide others to develop more practical energy collection systems.

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