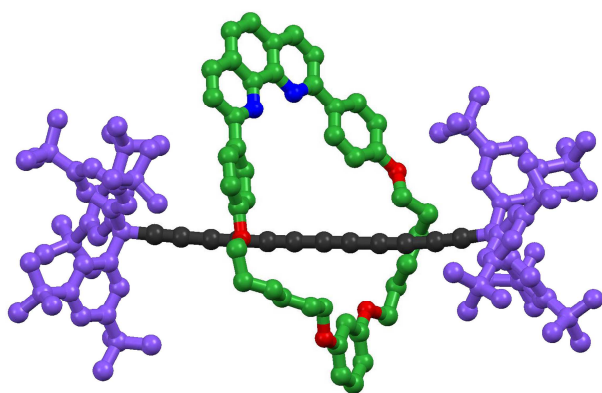


Electronic Characteristics of One-Dimensional Carbon
Rods

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The rigid and linear geometry of the acetylene group make it an outstanding building block for the construction of conjugated scaffolds. In particular, extended systems build from acetylene components, i.e. polyynes, are intriguing for the formation of molecular wires. With this goal in mind, we have synthesized a variety of polyyne species to potentially serve as molecular wires.^[1] The same methods developed for polyyne synthesis also allows us to form the related class of compounds that are based on sp-hybridized carbon, namely the cumulenes.^[2] Finally, we are exploring the use of mechanical bonds as a means to stabilize both polyynes and cumulenes, through the formation of rotaxanes.^[3] In this talk, our recent synthetic achievements toward sp-hybridized carbon wires, as well as the characterization of their electronic and optical properties will be presented.



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[2] J. A. Januszewski, D. Wendinger, C. D. Methfessel, F. Hampel, R. R. Tykwinski, *Angew. Chem.*, in press.
[3] L. D. Movsisyan, D. V. Kondratuk, M. Franz, A. L. Thompson, R. R. Tykwinski, H. L. Anderson, *Org. Lett.* **2012**, *14*, 3424–3426.