

SPECTROSCOPIC CHARACTERIZATION OF PSEUDOCARBYNES: INTERACTION BETWEEN $\text{--C}\equiv\text{C--}$ CHAINS AND METAL CLUSTERS

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Pseudocarbynes are a new class of molecules/materials that we define as finite sp-hybridized carbon chains stabilized through non-covalent interactions with metal clusters. These exciting and innovative materials are expected to approach the unprecedented strength, elastic modulus, and stiffness of carbyne, which has defied isolation and characterization for over a century. We optimized a procedure to synthesize pseudocarbynes via the finely controlled laser ablation of a liquid/metal interface, where clusters and one-dimensional carbon chains self-assemble from colloidal solutions into new mesomaterials that bridge the molecular and materials realms. I will present our spectroscopic results demonstrating the non-covalent interaction between $\text{--C}\equiv\text{C--}$ chains and small metal clusters as characterized by strong signatures in UV-vis, Raman, and infrared spectroscopies.