

Abstract Submitted  
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**Towards switchable carbon nanotube interconnects** NICOLAS POILVERT, NICOLA MARZARI, Massachusetts Institute of Technology — Carbon nanotubes have attracted much attention both in theory, computation and experiment for the past fifteen years. Despite synthetic challenges those unique quasi-one dimensional systems remain one of the preferred components of future electronic devices beyond silicon technology. We explore here the use of organic addends to functionalize carbon nanotubes and tailor and engineer their conducting properties. Once functionalized metallic nanotubes can become insulators if  $sp^2$  to  $sp^3$  rehybridization takes place. We explore here with first-principles calculations a number of organic addends that could lead to switchable rehybridization, allowing for real-time on/off control of the conductance.

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