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Transport through Polyene Junctions in between Angled-cut Armchair Carbon Nanotubes[1] YIING-REI CHEN, MING-KUAN LIN, National Taiwan Normal University — Single-polyene and two-polyene molecular junctions bridging carbon nanotube (CNT) leads are further studied in this work. We calculate and investigate the Greens function of the CNT leads from the edge into the bulk tube, to show the oscillation in the layer-by-layer DOS of the cross-cut armchair CNTs, and the edge states of the cross-cut zigzag CNTs. Also exhibiting a zigzag rim at the cut, an angled-cut armchair CNT gives a layer-by-layer DOS that shows not only evanescent edge states, but also an oscillation into the bulk tube. We study the polyene junction transport with these angled-cut armchair CNT leads, to find the interference between transport channels. The contributions from the bulk states and edge states are differentiated, by understanding the difference in the Greens functions obtained from direct integration method and iterative method, separately.

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