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Graphene Nanoribbons Anchored to a SiC Substrate. LILIA WOODS, NAM LE, University of South Florida, Department of Physics — Due to their exceptional fundamental characteristics graphene nanoribbons play a major role in the development of future nano-technological applications. The high chemical reactivity of the graphene nanoribbon edges can be utilized to create modified materials. Using first principles simulations we explore this possibility to construct patterned systems composed of anchored ribbons of zigzag edges covalently bonded to a SiC substrate. The hybrid edge states are found to possess interesting electronic and magnetic properties, which alter the overall behavior of the entire system as compared to the behavior of the individual components. It is found that the van der Waals interactions are important for the overall stability and structure of the anchored ribbons. Also, spin-polarization effects play a profound role in the electronic structure and associated density of states. The hybrid graphene/SiC zigzag edges are analyzed in terms of their transport characteristics as well.

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