Abstract Submitted
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Formation of Molecular Networks: Tailored Quantum Boxes and Behavior of Adsorbed CO in Them[1] JON WYRICK, DEZHENG SUN, DAE-HO KIM, ZHIHAI CHENG, WENHAO LU, YEMING ZHU, MIAOMIAO LUO, UC Riverside, YONG SU KIM, ELI ROTENBERG, LBL Berkeley, KWANGMOO KIM, T.L. EINSTEIN, U. Maryland, LUDWIG BARTELS, UCR — We show that the behavior of CO adsorbed into the pores of large regular networks on Cu(111) is significantly affected by their nano-scale lateral confinement and that formation of the networks themselves is directed by the Shockley surface state. Saturation coverages of CO are found to exhibit persistent dislocation lines; at lower coverages their mobility increases. Individual CO within the pores titrate the surface state, providing crucial information for understanding formation of the network as a result of optimization of the number N of electrons bound within each pore. Determination of N is based on quinone-coverage-dependent UPS data and an analysis of states of particles in a pore-shaped box (verified by CO's titration); a wide range of possible pore shapes and sizes has been considered.

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