An interface stabilized SnOₓ/Pt(110) nano-oxide characterized by a c(2 × 4) surface reconstruction is prepared and characterized by low-energy electron diffraction (LEED), synchrotron radiation photoemission spectroscopy (SRPES), and scanning tunneling microscopy (STM). Based on the experimental data, atomic models for the nano-oxide are proposed and then validated by comparing the experimental results with the outcome of first-principle calculations. The reactivity of the nano-oxide toward CO is investigated, obtaining that the c(2 × 4) reconstruction efficiently oxidizes CO to CO₂. The SnOₓ nano-oxide on the Pt(110) surface can act as a reservoir for oxygen that can diffuse on the adjacent Pt areas where it oxidizes CO. This spillover effect endows the SnOₓ/Pt(110) system with enhanced tolerance to CO poisoning.

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