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Low-Z, Chemically Resistant, Microfabricated Carbon Composite Transmission Electron Microscope Grids KYLE ZUFELT, RICHARD VANFLEET, ROBERT DAVIS, Brigham Young University - Provo — An issue that often impacts x-ray and electron analysis of electron microscopy samples is the presence of high-Z atoms in the chosen substrate. In many cases, it is also desirable that the chosen substrate be resistant to chemicals and various processing methods. We present an improved transmission electron microscope (TEM) grid made by carbon-infiltrated carbon nanotube templated microfabrication (CNT-M). We present a method for controlling the delamination of carbon-infiltrated carbon structures as well as a batch process for coating CNT-M structures in suspended thin films. Several membranes were deposited on the grids, including Formvar, amorphous carbon, silicon dioxide, and alumina. These grids provide a significant advantage in analytical TEM applications due to the absence of high-Z atoms and the improved chemical resistivity which allows for a wider range of sample preparation and processing techniques. The refinement of the CNT-M process may have applications in future research on MEMS and other CNT-M devices.

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