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**Pressure effect on multiwalled carbon nanotubes (MWCNT) up to 25 GPa probed by X-ray Raman scattering** MALCOLM NICOL, RAVHI KUMAR, ANDREW CORNELIUS, MICHAEL PRAVICA, University of Nevada, Las Vegas, MICHAEL HU, HPCAT, APS, Argonne National Laboratory — X-ray Raman scattering (XRS) is a sensitive bulk probe that yields information about the local structure of systems and compounds in the soft x-ray regime. The availability of high energy synchrotron radiation has allowed combining this method with different sample environmental conditions such as extreme pressures and temperatures. Here we present the C k-edge measurements under pressure to investigate the bonding changes of multi walled carbon nanotubes (MWCNT) up to 25 GPa. The results show that the MWCNT transform to a superhard phase similar to diamond around 15 GPa. Further compression results in a structural collapse leading to an amorphous state.

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