Abstract Submitted
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Ultra-incompressible Three Dimensional Long-range Ordered Amorphous Carbon Clusters[1] LIN WANG, Carnegie Institution of Washington, 1HPSYNC, GEOPHYSICAL LABORATORY, CARNEGIE INSTITUTION OF WASHINGTON, ARGONNE, IL 60439, USA TEAM — Here we report the synthesis of a long range ordered material constructed from units of amorphous carbon clusters and solvent molecular. This material has super-incompressibility which can make indents on diamonds. It was synthesized by crushing the fullerenes cages at high pressure. Using high pressure x-ray diffraction and Raman spectroscopy, we observed that the fullerenes cages collapse as the pressure higher but the sample remains in crystalline phase even at 60 GPa. The high pressure phase is ultraincompressible, quenchable and much denser than the starting material. The discovery of the existence of such a unique phase should lead to a great deal of interest for design and synthesis of materials with this characteristic.

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