

Abstract Submitted  
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**Synchrotron x-ray diffraction and infrared spectroscopy studies of C<sub>60</sub>H<sub>18</sub> under high pressure** BINGBING LIU — *In situ* high-pressure angle dispersive synchrotron X-ray diffraction and high-pressure mid-IR spectrum measurements of C<sub>60</sub>H<sub>18</sub> were carried out up to 32 GPa and 10.2 GPa, respectively. Our diffraction data indicated the fcc structure of C<sub>60</sub>H<sub>18</sub> was stable up to 32 GPa. The bulk modulus B<sub>0</sub> was determined to be 21±1.16 GPa, about 40% higher than that of C<sub>60</sub>. The C-H vibrations still existed up to 10.2 GPa and the vibration frequencies decreased with increasing pressure. IR active vibrational frequencies and their corresponding eigenvectors of C<sub>60</sub>H<sub>18</sub> were simulated by DMOL<sub>3</sub>. The effects of hydrogen in the fullerene molecular cage on the stability of structure under high pressure were discussed.

Bingbing Liu

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