Synchrotron x-ray diffraction and infrared spectroscopy studies of C_{60}H_{18} under high pressure BINGBING LIU — In situ high-pressure angle dispersive synchrotron X-ray diffraction and high-pressure mid-IR spectrum measurements of C_{60}H_{18} were carried out up to 32 GPa and 10.2 GPa, respectively. Our diffraction data indicated the fcc structure of C_{60}H_{18} was stable up to 32 GPa. The bulk modulus B0 was determined to be 21±1.16 GPa, about 40% higher than that of C_{60}. 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_{60}H_{18} were simulated by DMOL3. The effects of hydrogen in the fullerene molecular cage on the stability of structure under high pressure were discussed.