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Electronic Raman scattering in Bi-based superconductors under pressure[1] XIAOJIA CHEN, VIKTOR V. STRUZHKIN, ALEXANDER F. GONCHAROV, RUSSELL J. HEMLEY, HO-KWANG MAO, Geophysical Laboratory, Carnegie Institution of Washington, Washington, DC 20015, U.S.A., CHENG-TIAN LIN, Max-Planck-Institut für Festkörperforschung, D-70569 Stuttgart, Germany, JIAN-XIN ZHU, Theoretical Division, Los Alamos National Laboratory, Los Alamos, New Mexico 87545, U.S.A. — Determining the nature of interaction responsible for the Cooper-pair formation in cuprates remains unsettled. The most probable candidates are lattice vibrations (phonons) and spin fluctuation modes. Recently, it has been argued that Raman scattering in B_{1g} symmetry may serve as a probe to distinguish between phonon-mediated and magnetically mediated d-wave superconductivity. Here we report the results of electronic Raman scattering measurements in Bi-based bilayer and trilayer superconductors at high pressures and at temperatures around 12 K. As a clean and effective tool, pressure enhances T_c and thus increases the pairing interaction in these materials. Meanwhile, we find that pressure also brings about the change of the B_{1g} mode. The observed evolution of B_{1g} modes with pressure sheds important insight on the pairing mechanism of high-T_c superconductivity.

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