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Low-energy spectroscopy on molecular materials under high pressures K. THIRUNAVUKKUARASU, National High Magnetic Field Laboratory (NHMFL), Tallahassee, USA, C.A. KUNTSCHER, Experimental physics II, University of Augsburg, Germany, C.C. BEEDLE, NHMFL, Tallahassee, USA, STEPHEN WINTER, Department of Chemistry, University of Waterloo, Ontario, Canada, K. KAMARÁS, Wigner Research Center for Physics, Budapest, Hungary, F. HENNRICH, Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany, A. KOVALEV, NHMFL, Tallahassee, USA, S. TOZER, NHMFL, Tallahassee FL 32310 USA, R.T. OAKLEY, Department of Chemistry, University of Waterloo, Ontario, Canada, S. HILL, NHMFL, Tallahassee, USA — Low-energy spectroscopy at extreme conditions opens doors to discovery and understanding of novel phenomena in condensed matter physics. In particular, applying hydrostatic pressure is the ideal way to continuously induce structural perturbations such as changes in intermolecular distances, and thereby control the various exchange interactions in novel materials. Among low-energy spectroscopic techniques, infrared and electron spin resonance (ESR) spectroscopy are powerful tools to probe the charge and spin degrees of freedom, respectively, and provide important information on the fundamental energy scales involved in various novel phenomena. However, use of these techniques to investigate materials at high pressures involves a high level of difficulty. In this talk, uncommon combinations of high pressure with IR spectroscopy and multi-frequency ESR spectroscopy, and their application to the study of molecular materials will be discussed. Depending on the availability of time, the strength of these techniques will be illustrated with examples.

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