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Ammonia ice at very high pressure SANDRA NINET, Universite Pierre et Marie Curie - Institut de Mineralogie et de Physique des Milieux Condensés - Paris VI, France, FREDERIC DATCHI, Universite Pierre et Marie Curie - Institut de Mineralogie et de Physique des Milieux Condenses - Paris VI, France, PAUL DUMAS, Synchrotron SOLEIL, Gif Sur Yvette, France, MOHAMED MEZOUAR, GASTON GARBARINO, European Synchrotron Radiation Facility, Grenoble, France, ADRIEN MAFETY, Universite Pierre et Marie Curie - Institut de Mineralogie et de Physique des Milieux Condenses - Paris VI, France, CHRIS PICKARD, Department of Physics and Astronomy, University College London, United Kingdom, RICHARD NEEDS, Theory of Condensed Matter Group, Cavendish Laboratory, Cambridge, United Kingdom, MARCO SAITTA, Université Pierre et Marie Curie - Institut de Minéralogie et de Physique des Milieux Condensés - Paris VI, France — In this presentation, we report an extended experimental investigation of the phase diagram of ammonia at high pressure and temperature. By combining Raman scattering and X-ray diffraction experiments, we demonstrate the presence of a new H-disordered crystalline form above ∼60 GPa and ∼700 K. Using *ab initio* MD simulations, we show that this new disordered phase is a superionic conductor. We will also present new experimental results (infrared, Raman and X-ray) on NH_3 and ND_3 at ambient temperature up to 200 GPa and will discuss the existence of ionic ammonia ices.

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