

Plenary Talk

PV XVII Fri 9:00 Audimax 1

Superconductivity near room temperature — ●МІКHAІL EREMETS — Max-Planck-Institut für Chemie (Otto-Hahn-Institut) Hahn-Meitner Weg 1 55128 Mainz Germany

Superconductivity at ambient conditions is one of the most challenging and long-standing problems in condensed-matter physics. Recently, superconductivity at 203 K was discovered in H₃S at high pressure (Drozdov, Eremets et al. 2015), breaking archaic paradigms on conventional superconductivity. In the last years, many other superconductors were discovered and T_c of 250 K (Drozdov, Kong et al. 2019, Somayazulu,

Ahart et al. 2019, Flores-Livas, L et al. 2020) was reached in a superhydride LaH₁₀. Even higher critical temperatures were predicted theoretically (Sun, Lv et al. 2019). These record-breaking superconductors model atomic metallic hydrogen where high-temperature superconductivity was predicted 50 years ago (Ashcroft 1968, Ashcroft 2004). In this respect, I will show the most recent efforts on seeking the superconducting phase of pure hydrogen (Eremets, Drozdov et al. 2019). The progress towards room temperature superconductivity at moderate and ambient pressure is likely to be related to light-elements materials with strong covalent bonding.