

# Heavy-fermion superconductivity in $\text{Ce}_2\text{PdIn}_8$

D. Kaczorowski, A.P. Pikul, D. Gnida, and V.H. Tran

*Institute of Low Temperature and Structure Research, Polish Academy of Sciences,  
P. O. Box 1410, 50-950 Wrocław 2, Poland,*

The spectacular discoveries of pressure-induced unconventional superconductivity in antiferromagnetically ordered  $\text{CeRhIn}_5$  and  $\text{Ce}_2\text{RhIn}_8$ , as well as ambient-pressure heavy-fermion superconductivity in paramagnetic  $\text{CeCoIn}_5$ ,  $\text{Ce}_2\text{CoIn}_8$  and  $\text{CeIrIn}_5$ , have ignited much research activity, which resulted in many crucial findings as regards magnetically-mediated superconductivity, coexistence of antiferromagnetism and superconductivity, formation of a Fulde-Farrell-Larkin-Ovchinnikov state, non-Fermi liquid features due to quantum criticality, etc. In order to understand the role of magnetic anisotropy and crystal field effect on the properties of these materials, a few studies have been carried out on isostructural systems in which Ce is entirely or partly replaced by different rare-earth atom and/or In is substituted by other  $p$ -element. However, hardly any studies have been performed so far on phases containing a transition metal different from Co, Rh or Ir. In this talk we shall report on the intriguing properties of a novel representative of the  $\text{Ce}_2T\text{In}_8$  family, namely  $\text{Ce}_2\text{PdIn}_8$ , that exhibits clean-limit superconductivity at ambient pressure conditions. The key thermodynamic parameters indicate a heavy-fermion character of the superconducting state.