

# Magnetic Properties and Specific Heat Studies of the Plumbides CeTPb ( $T = \text{Cu, Pd, Ag, Au}$ )

Wilfried Hermes<sup>a</sup>, Sudhindra Rayaprol<sup>b</sup>, and Rainer Pöttgen<sup>a</sup>

<sup>a</sup> Institut für Anorganische und Analytische Chemie, Universität Münster, Corrensstraße 30, D-48149 Münster, Germany

<sup>b</sup> UGC-DAE CSR, Mumbai Center, R-5 Shed, BARC, Trombay, Mumbai - 400085, India

Reprint requests to Prof. Dr. R. Pöttgen. E-mail: pottgen@uni-muenster.de

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*Dedicated to Dr. Bernard Chevalier on the occasion of his 60<sup>th</sup> birthday*

The cerium plumbides CeCuPb, CePdPb, CeAgPb, and CeAuPb have been synthesized from the elements in sealed tantalum tubes in a high-frequency furnace followed by annealing. The copper, silver and gold compounds crystallize with the NdPtSb-type structure, space group  $P6_3mc$ :  $a = 466.1(2)$ ,  $c = 778.1(3)$  pm for CeCuPb,  $a = 484.8(2)$ ,  $c = 773.0(3)$  pm for CeAgPb, and  $a = 480.24(9)$ ,  $c = 772.9(2)$  pm for CeAuPb. CePdPb crystallizes with the ZrNiAl-type structure:  $P\bar{6}2m$ ,  $a = 775.0(2)$ ,  $c = 413.32(8)$  pm. The dc susceptibility measurements show trivalent cerium for all four plumbides with experimental magnetic moments of 2.53(2), 2.71(2), 2.63(2), and 2.58(2)  $\mu_B/\text{Ce atom}$  for CeCuPb, CePdPb, CeAgPb, and CeAuPb, respectively. The compounds CeCuPb, CeAgPb, and CeAuPb, studied by dc susceptibility and specific heat measurements, order antiferromagnetically at Néel temperatures of 8.2(1), 7.4(1), and 3.7(1) K, respectively.

*Key words:* Cerium Intermetallics, Plumbides, Magnetism