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Thermal Effects of Phase Transitions of Cerium and Neodymium

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Abstract : Phase transitions of cerium and neodymium are investigated by using high temperature scanning calorimeter (HT-1500 Seteram). For cerium two types of transformation are detected: at 350-372 K - hexagonal close packing (hcp) - face-centered cubic lattice (fcc) transition, and in 880-960K the face-centered cubic lattice (fcc) transformation into body-centered cubic lattice (bcc). For neodymium changing of hexagonal close packing (hcp) into body-centered cubic lattice (bcc) is detected at 1093-1113K. The thermal characteristics of transitions – enthalpy, entropy, temperature domains – are reported.

Keywords : cerium, calorimetry, neodymium, enthalpy of phase transitions, neodymium
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