Observation of Anomalous Heat Release and Helium-4 Production from Highly Deuterated Palladium Fine Particles

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Abstract:

Observations were made of the anomalous production of $^4$He atoms as well as the anomalous heat release when Pd fine particles are highly deuterated inside an enclosed Pd metal vessel used as a cathode in electrolysis of D$_2$O. A mass analysis of the remnant Pd powders after the 2000-hr heat production revealed substantial production of $^4$He atoms.

Keywords: double-structure cathode, deuterated Pd, Pd black, electrolysis, excess energy, $^4$He production

Fig. 1. (Left) Schematic view of the electrolysis apparatus with a DS-cathode. The DS-cathode is surrounded by a cylindrical Pt anode. The electrolyte (water+0.1 M LiOH) is continuously cooled by chilled water flowing through a cooling coil. (Right) Structure of the DS-cathode used for the present experiments. Fine particles of Pd (Pd black) of about 20 nm diameter are enclosed in a vacuum in a Pd metal vessel of 3 mm wall thickness, 14 mm outer diameter and 50–70 mm length.