Anomalous Heat Induced by Deuterium Flux in a Bunch of Long-Thin Palladium Tubes using PID Method for Calorimetry

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In 15 year continuous experiments, gas-loading deuterium-palladium system has evolved from a long-thin palladium wire to a bunch of long-thin palladium tubes (Fig. 1). Calorimetric analysis has evolved from high precision Seebeck micro-calorimeter (C-80) [1] to a high precision digital power supply controlled by a PID system. Triggering mechanism has evolved from pumping outside the palladium tube to pumping inside the palladium tubes. The pure palladium wire has evolved to quaternary alloy tubes (Pd-Ag-Au-Ni). Anomalous heat has been induced by a deuterium flux through the thin wall of the palladium tubes. It lasted several hours. It manifested itself as a spontaneous oscillation of temperature with an exponentially growing amplitude first (Fig. 2). The maximum temperature has been extended from 120°C to 150°C. A flow-calorimeter is going to apply for confirmation of this anomalous heat effect.

This anomalous heat effect in deuterium-palladium has a positive temperature coefficient. It would have had driven the system unstable if there had been no PID controlled power supply.

An anomaly in the Ni-Cr heating wire has been identified in the deuterium gas after heating around 150°C. It appears as a negative temperature coefficient of electrical resistance with anomalously large magnitude. This heating feature constitutes the seeds of a spontaneous oscillation of temperature.