

## **Anomalous Isotopic Composition of Silver in a Palladium Electrode**

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In 2001, Stanley Pons gave me a palladium cathode that had produced a lot of excess heat. The electrode was 10cm long and 2mm in diameter. It was pure palladium and was used in an ICARUS 9 calorimeter. The electrode stayed in my drawer for years, until I found a laboratory that could do dynamic SIMS (Secondary Ion Mass Spectroscopy). The equipment was a Cameca 4f machine that can detect masses of elements with high sensitivity.

The analysis showed the presence of silver at the surface of the cathode, but not in the bulk. Silver was not spread uniformly on the cathode, but there were hot spots with silver. The SIMS machine used an oxygen ion beam for sputtering the surface. A thin film of 100nm of palladium on silicon permitted the calibration of the etch rate.

We show that at hot spots, the ratio between Ag-107/Ag-109 is close to 10, whereas in natural silver this ratio is 1.06. A depth profile analysis shows that silver disappears at one micron of the surface.

This work shows first, that in addition to the production of helium-4, there is also transmutation of palladium to silver. Also, this analysis shows that cold fusion reactions occurs at a maximum depth of one micron.