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Accuracy of Cold Fusion Calorimetry MELVIN H. MILES, Department of Chemistry, University of LaVerne, LaVerne, CA 91750 (mmiles@ulv.edu), MARTIN L. FLEISCHMANN, Fellow of the Royal Society, Bury Lodge, Duck Street, Tisbury, Salisbury, Wilts., SP36LJ, U.K. — The cold fusion controversy centers on the precision and accuracy of the calorimetric systems used to measure excess enthalpy generation. For open, isoperibolic calorimetric systems, there is no true steady state during D2O+LiOD electrolysis. Exact calorimetric measurements, therefore, require modeling by a differential equation that accounts for all heat flow pathways into and out of the calorimetric systems. The improper use and misunderstanding of this differential equation is a major source of confusion concerning cold fusion calorimetric measurements. The use of a platinum cathode as a control showed that excess power due to the controversial recombination effect was measurable at 1.1 plus or minus 0.1 mW. Theoretical calculations using Henry's Law and Fick's Law of Diffusion yield approximately 1 mW for this effect due to oxygen reduction at the cathode. Palladium-boron alloy materials prepared at the Naval Research Laboratory have shown a remarkable ability to produce excess power effects in the range of 100 to 400 mW. The excess power increased to over 9000 mW during the final boil-off phase in one experiment.

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