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The Use of SSNTD's in the Pd-D Co-deposition Experiment

FRANCIS TANZELLA, Materials Research Laboratory, SRI International, Menlo Park, CA, 94025, USA. , MICHAEL M.C.H. MCKUBRE, SRI International, Menlo Park, CA, 94025, USA. — An early derivative experiment of the original Fleischman-Pons electrochemical experiment [1-3] was that of Szpak et al [4-5]. Szpak et al. chose to electro- deposit bulk metal palladium on a conductive metal substrate from a deuterium oxide (D₂O) solution of a Pd salt, as opposed to electrolytically loading a bulk Pd cathode in a D₂O solution. Recent work, by Boss et al [6] has concentrated on using solid state nuclear track detectors (SSNTD, specifically CR-39) to search for evidence of nuclear particles. In most of these experiments the CR-39 was immersed in the electrolyte, which makes the interpretation of the tracks potentially ambiguous because of the possibility of chemical damage. However, different interpretations of results presented have concluded that the data argue for the generation of alpha particles, protons, and/or neutrons. We have chosen to reproduce one version of these recent experiments using CR-39 immersed and separated from the electrolyte with a 6 μm thick piece of Mylar[®] film. A 60 μm thick piece of polyethylene, used as a protective cover during handling, was occasionally allowed to remain on the film to facilitate thermalization of possible product neutrons. 1. Fleischmann, M., S. Pons, and M. Hawkins, "Electrochemically induced nuclear fusion of deuterium". J. Electroanal. Chem., 1989. 261, 301

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