Characterization of Various Reactor Steels by Slow Positron Beam

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Abstract. Experimental simulation of radiation effects in nuclear materials and the acceleration of radiation damage utilizing single, dual or triple ion beam ion irradiation has become an effective tool for nuclear material research [1]. The primary purpose of these experiments is to simulate extreme radiation environments without nuclear transmutation reactions and to compare bulk irradiation with near-surface ion implantations. The interpretation of the experimental data obtained using slow positron beam techniques in the light of published irradiation studies on bulk requires some knowledge of common defect profiles in the fresh as well as in the irradiated materials. The presented work is focused on the interpretation of the experimental data obtained by Pulsed Low Energy Positron System (PLEPS) of various grades of steels in as-received state as well as after ion implantations.