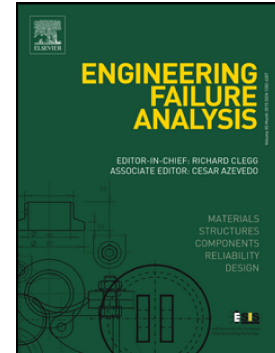


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Charpy impact test on A508-3 Steel after neutron irradiation

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Abstract: Reactor pressure vessel (RPV) is the critical un-changeable component of the reactor during its service lifetime, which prevents the radioactive leak of the nuclear power plant core. The irradiation test (about $10 \times 10^{19} \text{ cm}^{-2}$, $E > 1 \text{ MeV}$) in research reactor of the pressure vessel material was carried out, and the charpy impact test has been carried out before and after the neutron irradiation. Analysis of the impact energy and the fracture morphology has been done to estimate the embrittlement due to neutron irradiation. It shows that the main effects of neutron irradiation to fracture are the crack initiation and stable expansion process. And there also are a small amount of intergranular fracture in the unstable crack expansion after neutron irradiated which aware us pay more attention to the increasing intergranular fracture behavior of higher neutron fluence level after 60a nuclear power plant operation.

Keywords: Irradiation Embrittlement; Neutron Irradiation; Impact test; A508-3 steel.

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