

Preliminary measurements of Hydrogen Permeation through a Tungsten-Coated F82H steel

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8-9% Cr reduced activation ferritic-martensitic steels (RAFM steels) have been proposed as structural materials for nuclear fusion facilities such as ITER and DEMO. RAFM steel will be exposed to incident ions of H isotopes that escape from the plasma. Plasma-facing Tungsten (W) components will probably shield the steel from the effect of those ions.

In this work we present our first results on hydrogen permeation through W-coated F82H steel membranes. The 0.5 mm thick disks were covered by 0.10 to 0.35 μm thick W films deposited by magnetron sputtering on the H-entry face. H permeation transients were obtained in a permeation cell with gas phase charging and electrochemical detection at temperatures ranging from 303 to 343 K.

Preliminary results show moderated permeation reduction factors.

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