Development of Advanced Low N 12Cr Ferritic/Martensitic Steel for Reactor Applications

C.J. Rietema, A.J. Clarke, T.A. Saleh, O. Anderoglu, B. Eftink, M.M. Hassan, K.D. Clarke

Low nitrogen (<10 ppm) vacuum induction melted (VIM) lab heats of the ferritic/martensitic alloy HT-9 have shown significant resistance to ductility loss after low temperature (<0.3 Tm) irradiation. The present work will examine the role of interstitial nitrogen on the effect of ductility loss after low temperature irradiation. Interstitial nitrogen levels will be controlled *via* titanium microalloying. High nitrogen (440 ppm) and low nitrogen (10 ppm) VIM heats along with four experimental titanium-containing heats have been produced. After initial characterization of nitrogen in each alloy, subsequent ion irradiation and characterization of irradiated properties will follow.