

International Conference on Fast Reactors and Related Fuel Cycles: Next Generation Nuclear Systems for Sustainable Development (FR17)



Contribution ID: 272

Type: POSTER

Use of ion irradiations to help design of advanced austenitic steels

Tuesday 27 June 2017 17:30 (1h 30m)

CEA develops new austenitic and ODS alloys to limit the swelling and withstand very high doses. In this study, 10 Austenitic Stainless Steels with different content of phosphorus, nickel, silicon, titanium and niobium were elaborated and irradiated with iron ions at 600°C in several metallurgical conditions. Different effects on void swelling were observed by Transmission Electron Microscopy (TEM).

The presence of dislocations, nano-precipitates and solutes in the matrix modify the size and the density of the cavities which appear during the irradiation. Results help to design new alloys optimized regarding the swelling resistance.

Country/Int. Organization

CEA

Author: Dr DE CARLAN, Yann (SRMA, CEA Saclay, Université Paris-Saclay, 91191 Gif-sur-Yvette Cedex, France)

Co-authors: Prof. LEGRIS, Alexandre (Unité Matériaux et Transformations (UMET), UMR CNRS 8207, Université Lille 1, 59655 Villeneuve d'Ascq, FRANCE); Dr ROUXEL, Baptiste (SRMA, CEA Saclay, Université Paris-Saclay, 91191 Gif-sur-Yvette Cedex, France); Dr BISOIR, Caroline (DMN, CEA Saclay, Université Paris-Saclay, 91191 Gif-sur-Yvette Cedex, France)

Presenter: Dr DE CARLAN, Yann (SRMA, CEA Saclay, Université Paris-Saclay, 91191 Gif-sur-Yvette Cedex, France)

Session Classification: Poster Session 1

Track Classification: Track 5. Fast Reactor Materials (Fuels and Structures) and Technology