Contribution ID: **582** Type: **POSTER**

(U,Pu)O2-x MOX pellet for Astrid reactor project

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

Abstract

Since 2015, **AREVA and CEA** teams decided to launch yearly industrial tests of MOX pellets with an adapted GEN III design in the **MELOX** plant, to prepare the future manufacturing of MOX fuels bundle for Astrid reactor.
First campaign (2015) of tests was dedicated to demonstrate the feasibility of this manufacturing at half industrial scale; Main modifications involved the pelletizing station of LCT workshop (small scale line for MOX manufacturing) and one of the industrial furnaces, in order to define the range of main parameters (powder preparation, pelletizing and sintering steps and MOX pellet analyses procedures). Specified analyses results were performed in MELOX plant laboratory, completed with EPMA analyses on MOX pellet sent to CADARACHE CEA laboratory : First results show that required properties of these MOX pellet, meet the specified criteria defined by CEA teams, the most important one's are related to pellet design (dimensions and density), Pu distribution and stoichiometry.
Second campaign (2016) of tests, included a powder preparation step at industrial scale on one of the blender of the MELOX plant, in order to prepare the industrial manufacturing of MOX pellet for one fuel bundle, designed for a prototypical irradiation. Main results show again that the specified criteria are respected increasing the confidence in the process route.

Keywords: MOX, annular pellet, Astrid, EPMA.

Country/Int. Organization

FRANCE / AREVA and CEA

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Session Classification: Poster Session 1

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