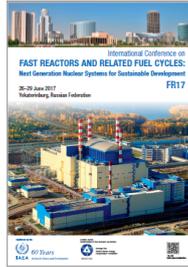


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Fabrication and Evaluation of Advanced Cladding Tube for PGSFR

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Ferritic/martensitic steels are being considered as cladding materials for PGSFR. So KAERI has developed cladding material (FC92) which has superior thermal creep property to HT9. In order to verify the performance of cladding tube, KAERI has manufactured FC92 cladding tube in connection of the steelmaking industry. Out-of-pile tests like mechanical tests (uniaxial tensile, biaxial burst, pressurized creep) and simulated transient test are now being conducted. Thermo-physical properties (density, Young's modulus, Poisson's ratio, thermal expansion, specific heat capacity and thermal conductivity) of FC92 material is being performed to use in fuel design. Quality assurance program has been introduced in all out-of-pile tests to acquire reliability of the test data. Evaluating in-pile property of cladding tube is essential for not only usage in fuel design but also demonstrating integral performance of developed cladding under irradiation condition. To verify its performance, KAERI has launched irradiation test program of fuel cladding tube using an experimental fast reactor. In 2014, KAERI has made the contract between RIAR in Russia for the irradiation tests in BOR-60, where irradiation creep and swelling will be mainly performed. Obtained dataset will be used for developing creep model of FC92 cladding tube, together with out-of-pile creep data.

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