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Joint ICTP-IAEA Workshop on Physics of Radiation Effect and its Simulation for Non-Metallic Condensed Matter | (smr 2359)

Wednesday 22 August 2012

Effects of neutron and gamma irradiation on degradation of nonmetallic materials for high temperature applications - Adriatico Guest House Giambiagi Lecture Hall (09:00-10:00)

Numerous degradation mechanisms can occur in inorganic nonmetallic materials as a result of exposure to ionizing and displacive irradiation. These include prompt or low-dose changes in physical properties such as radiation-induced electrical conductivity and optical properties. Other radiation degradation phenomena include amorphization (and more generally, phase instabilities), decrease in thermal conductivity, volumetric swelling, decrease in strength and/or fracture toughness, irradiation creep, and high temperature helium embrittlement. This presentation will provide a summary of the diverse effects of neutron and gamma irradiation on the physical and mechanical properties of monolithic and composite inorganic solids. The fundamental physical processes responsible for the various degradation phenomena (e.g., electronic ionization of impurities or atomic displacement damage) will be summarized.

time	title	presenter
09:00	Effects of neutron and gamma irradiation on degradation of nonmetallic materials for high temperature applications	STEVE ZINKLE