parameter model of plane front solidification problem for in-vessel corium [5] and the feasibility of using CALPHAD data for a consistent thermodynamic representation of the systems throughout the model has been shown.
Going a step further, CALPHAD based thermodynamic closures are being used in a mesoscopic diffuse interface model for studying the kinetics of a similar solidification process. The phase-field model is developed to treat plane-front solidification of sub-oxidized in-vessel corium and focuses on ensuring consistent use of CALPHAD data for a non-isothermal case. In this context, the framework of deriving phase-field equations from an entropy functional is useful. Developed by Penrose and Fife [6], this framework allows for thermodynamic consistency by guaranteeing non-negative local entropy production. The present study focuses on making use of the CALPHAD data to model the kinetics of solidification of corium sub-systems.

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DSL182

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Metallic Ions Adsorption Effects in Pseudoboehmites Produced by Sol-Gel Method

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The pseudoboehmite is a hydrated aluminum oxihydroxid produced by sol gel process started by inorganic precursor as an inorganic polymerization system [1]. Several studies were done about pesudoboehmite, reaching its utilization as an alumina precursor [2], drug delivery systems [3] (for drug like atenolol, acyclovir and glucantime for example) or as a reinforcement agent to synthesis of polymeric matrix nanocomposites [4]. The intent of this work is contribute to the study of the environment influence at pseudoboehmite nanoparticles. The nanoparticles were obtained by sol-gel process, starting from aluminum nitrate and ammonium hydroxide solutions. The product of synthesis reaction were characterized by Scanning Electron Microscopy (SEM), X-Ray Florescence (XRF), X-Ray Diffraction (XRD), Raman Spectroscopy, specific weight, granulometry average and nitrogen adsorption (BET) analysis, identifying the characteristics of the produced material and eventual adsorbed materials and respective effect on its properties. After the characterization, were verified that the pseudoboehmite nanoparticles adsorbed other chemical agents as iron, potassium, chrome and others.

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