Predicting and Optimizing High-Temperature Processes by FactSage in Some Selected Research Studies

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ABSTRACT

FactSage has been successfully utilized at Istanbul Technical University for over 20 years to define pyrometallurgical, hydrometallurgical and corrosion processes in courses and academic research studies. This study presents a collection of FactSage calculations published in joint proceedings and journals in collaboration with other universities and research centers. Firstly, the examples of calculated phase diagrams used to describe an oxy-nitrocarburizing (ONC) process onto different tool steels will be given. Next, some calculation results used to simulate the reactions in an industrial practice for Ca-treatment process of a selected Al-killed steel grade with sulfur addition will be presented. Finally, the use of the AIMP database in FactSage will be discussed to estimate the formations of nano-oxides in ODS (Oxide Dispersion Strengthened) IN-718 alloys produced by selective laser melting additive manufacturing techniques.