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ADVANCED CERAMICS AND APPLICATION II
New Frontiers in Multifunctional Material Science and Processing

Serbian Ceramic Society
Institute of Chemistry Technology and Metallurgy
Institute for Technology of Nuclear and Other Raw Mineral Materials
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Chromite based refractory coatings used in expandable patterns casting of Fe-C alloys

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A possibility to develop new chromite-based refractory coatings for casting applications has been investigated in this paper. The results of monitoring of synthesis and characterization procedure and finally application of the refractory coatings showed that sediment stability of coating suspension was crucial parameter for the quality of the coating. Optimization of the coating composition with the controlled rheologic properties was achieved by application of different coating components, particularly by application of a new suspension agent and by alteration of coating production procedure. Chromite was applied as filler. The chromite sample was tested by X-ray diffraction analysis, diffraction thermal analysis and scanning electron microscopy. The shape and grain size were analyzed with program package OZARIA 2.5. It was shown that application of this type of water-alcohol-based lining had a positive influence on surface quality, structural and mechanical properties of the castings of Fe-C alloys obtained by casting into sand molds, according to the method of expandable patterns.

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Dilatometric Analysis of Mechanically Activated SrTiO₃ Powder

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Strontium-titanate powder was mechanically activated in a planetary ball mill for 0, 5, 10, 30, 60, 90 and 120 minutes. Non-isothermal sintering of non-activated and activated SrTiO₃ powder samples in the temperature interval from 50 to 1300 °C with three different heating rates (10, 15 and 20 °C/min) was investigated on a dilatometer. X-ray powder diffraction and scanning electron microscopy (SEM) were used to determine the phase composition, lattice microstrains and microstructure morphology of the samples. XRD results showed the presence of new phases: SrCO₃ (strontium-carbonate) and TiO₂ (anatase) after 30 minutes of mechanical activation.