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DYNAMIC INTERACTION OF ALUMINA-MAGNESIA REFRACTORY AND MOLTEN STEEL

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As the lining of metallurgical vessels, refractory material is in direct contact with moving molten steel during the entire refining process. The dynamic interaction between molten steel and refractory material will seriously affect the service life of refractory lining and restrict the smelting safety and efficiency of steelmaking. In this paper, experiments on the interaction between alumina-magnesia castable and molten steels under dynamic smelting conditions were performed. The corrosion behaviour of molten steel on the alumina-magnesia refractory and the effect on the steel cleanliness was analysed and discussed. The corrosion mechanism of the alumina-magnesia refractory was revealed. The modified capillary number (Ca) can be used to compare the refractory wear by estimating the critical velocity of the emulsification. Furthermore, the empirical formulas for the emulsion droplet size were established, the formation and evolution mechanism of the inclusions was illustrated, which provides guidance for the application of refractory materials in the smelting of high quality steel

Biography

A.O Huang has completed his PhD in Material Science from Wuhan University of Science and Technology and Postdoctoral in Material Science and Metallurgy Engineering Studies from University of Leoben. He is a Professor of The State Key Laboratory of Refractories and Metallurgy, and School of Materials and Metallurgy. He has published more than 30 papers in reputed journals and has been serving as an Associate Editor in *Journal of the Australian Ceramic Society*.

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