

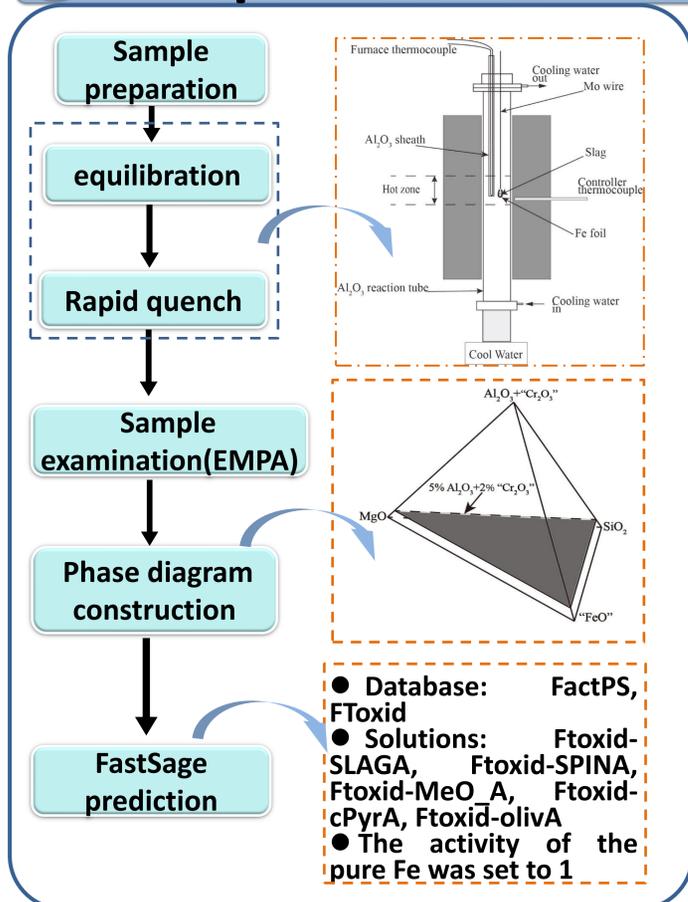
1

Introduction

In practice, in addition to the major components, MgO, FeO and SiO₂, the Al₂O₃ and Cr₂O₃ are also present in the ferronickel smelting slags. It was found that the liquid temperature in the olivine primary phase region was decreased with the increase of Al₂O₃. when Al₂O₃ and Cr₂O₃ were present, the liquidus temperature in cristobalite and tridymite primary phase fields also decreased. Optimal control of the slag chemistry is one of the important issues influencing efficient and stable operation of ferronickel smelting; and requires detailed knowledge of the slag phase equilibria and other physicochemical properties. Therefore, determined the phase equilibrium information of the anti-compound slag systems is importance to optimize the industry practice.

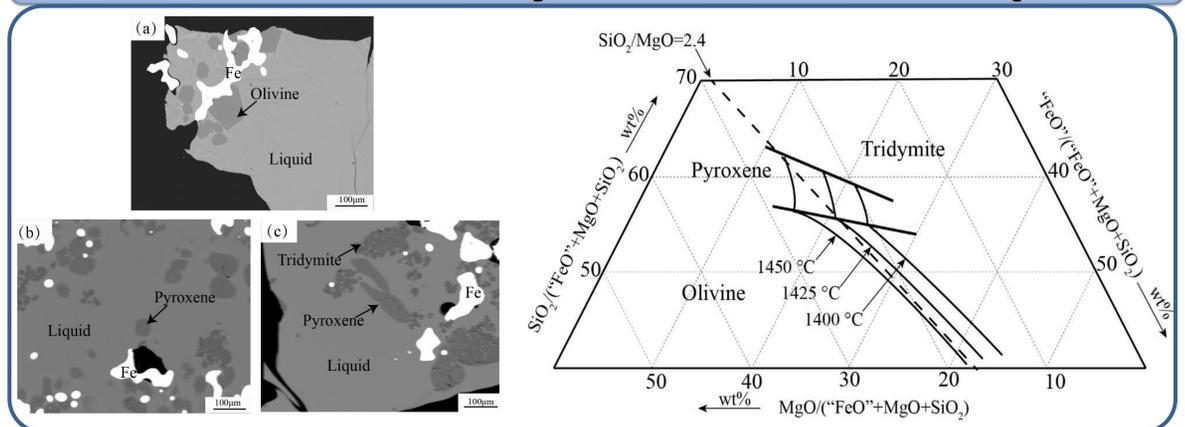
2

Experimental



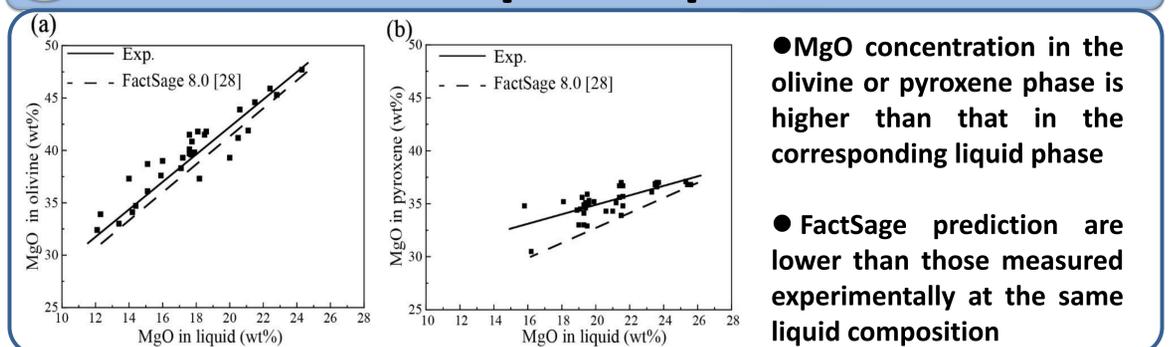
3.1

Pseudo-ternary Sections Description



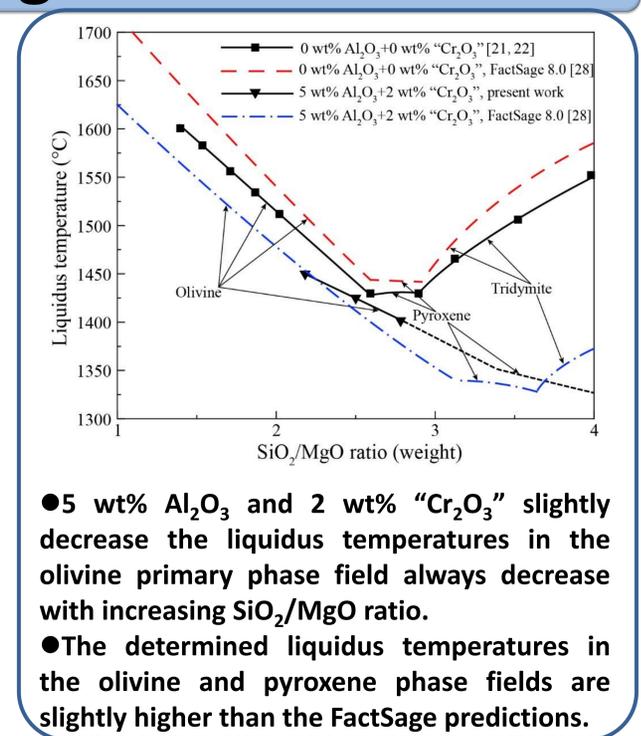
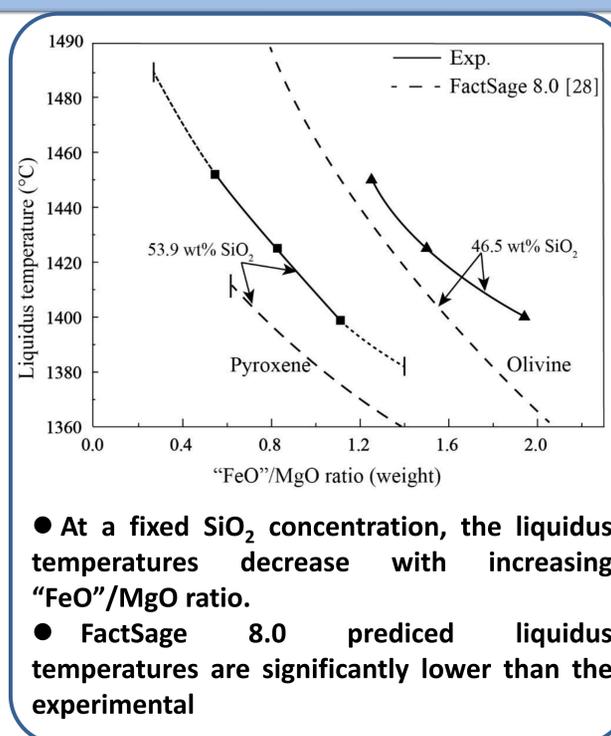
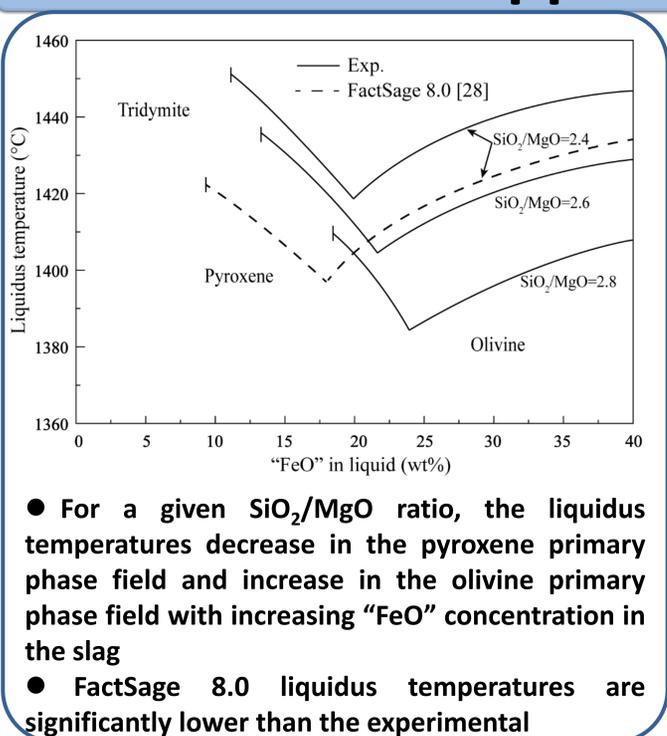
3.2

Solid-Liquid Equilibria



3.3

Applications of the Phase diagram



4

Conclusion

- High temperature experiments have been carried out to characterize the phase equilibria in the system “FeO”-SiO₂-MgO-Al₂O₃-“Cr₂O₃” in equilibrium with metallic iron
 - In the olivine primary phase field the liquidus temperatures are strongly dependent on the SiO₂/MgO ratio. In the pyroxene primary phase field the liquidus temperatures are mainly dependent on the MgO concentration.
 - The comparison of the liquidus temperatures between FactSage predictions and experimental results shows significant discrepancies, especially in pyroxene primary phase field
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