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Iron ore sinter structure development under realistic thermal conditions

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Highlights

- Effect of thermal condition on micro-structure in iron ore sinter
- Enhanced coalescence at higher temperature and/or lower flame front speed
- Mechanism of coalescence and densification in iron ore sintering
- Diagram of micro-structure development in sinter under realistic thermal conditions

ABSTRACT

In iron ore sintering, the bed structure transformation is caused by coalescence process occurring at flame front which determines sinter micro-structure. This study aims at how this can be affected by realistic thermal conditions. Analogue iron ore sinter mixes were sintered in an Infrared furnace and the micro-structure was studied by measuring porosity, pore size and circle factor.

Pore property analysis results showed that increasing maximum temperature, lengthening holding time and slowing heating rate have led to a reduced porosity and more round pore

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