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Speaker 9



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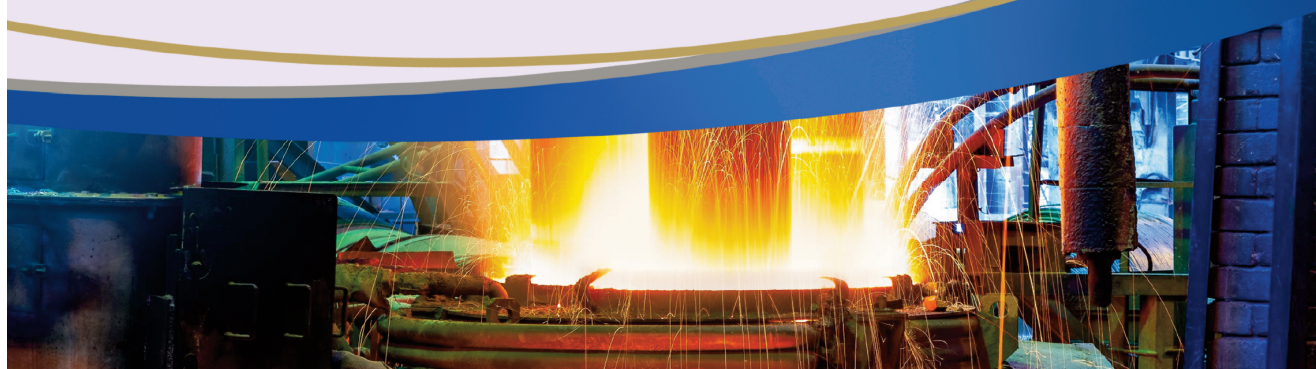
In situ synchrotron radiography investigation of graphite nodule evolution during solidification in ductile cast iron

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ABSTRACT:
The size distribution and morphology of graphite nodules are critical for mechanical properties of ductile cast iron (DCI). High-speed synchrotron radiography was used to investigate the nucleation, floatation and growth kinetics of graphite nodules during solidification in DCI. The motion of inoculants before nucleation was examined, including their velocity changes and travelling distances. Three distinct nucleation waves were identified. For each nucleation wave, the growth behaviour, encompassing growth rate, size distribution, and nucleation site distribution, was studied. Additionally, the evolution of the global size distribution and sphericity was analyzed. In the later stages of solidification, the merging behaviour of graphite nodules was investigated.



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