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Formation of Lamellar and Spheroidal Graphite in Cast Iron in Relation to the Micro-Segregation of Silicon*

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Abstract

By the addition of ferrosilicon to molten cast iron, not only is there the inoculating effect but also under certain conditions spheroidal graphite can be formed.

In order to investigate the role of silicon as an additive, experiment was carried out using the potentiostatic technique as a means of etching the primary structure. When the melt was treated with large amounts of refined ferrosilicon, microregions in which silicon was highly concentrated were observed in the cast state and spheroidal graphites were mostly formed in such regions. This suggests that the formation of spheroidal graphite is related to the local super-saturation of carbon caused by adding silicon to the melt.

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