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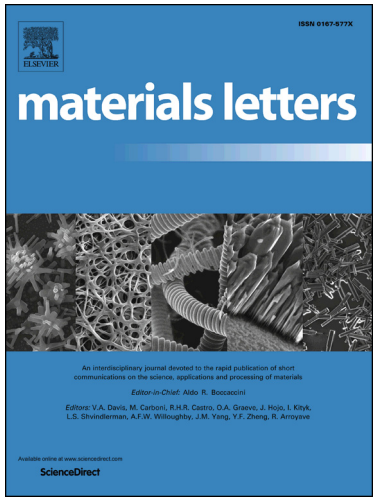

TiC – based local composite reinforcement obtained in situ in ductile iron based castings with use of rode preform

E.Olejnik, Ł. Szymański, T. Tokarski, M. Tumidajewicz

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TiC – based local composite reinforcement obtained in situ in ductile iron based castings with use of rode preform

E.Olejnik[1,2], Ł. Szymański[1,2], T. Tokarski[3], M. Tumidajewicz[4]

[1]Innerco Ltd., 43A Jadwigi Majówny St., 30-298 Cracow, Poland

[2]AGH University of Science and Technology, Faculty of Foundry Engineering, 23 Reymonta St., 30-059 Cracow, Poland, email: eolejnik@agh.edu.pl

[3]AGH University of Science and Technology, Academic Centre of Materials and Nanotechnology, 30 Mickiewicza Av., 30-059 Cracow, Poland

[4]Raqun Ltd., Fabryczna 4 St., 38-300 Gorlice, Poland

Abstract

Highexothermic type of reaction synthesis of TiC prevents obtaining stable dimensionally composite reinforcement in castings based on Fe alloys. The article presents a new method of in situ manufacturing of local composite reinforcement in ductile iron casting. The synthesis of TiC was performed by placing the substrates of reaction of its formation in a steel tube. A preform rod containing the substrates was placed in mould cavity and then poured the liquid casting alloy prevents in the same time the fragmentation of composite reinforcement during the synthesis reaction. As a result, composite casting with TiC reinforcement was obtained. The preform placed in a mould cavity showed thermal stability and was not melted. The presence of ceramic phase in a form of TiC caused the increase of hardness by more than 300%, when compared to matrix alloy. Workout method is a good candidate to obtain structural reinforcements in castings on Fe-based alloy.

Key words: TiC, in situ, preform, casting, composite reinforcement, ductile iron

Introdcution