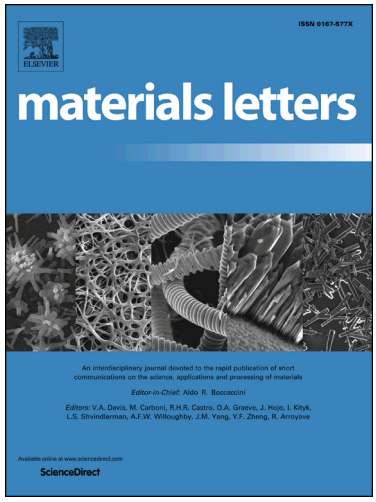

Wetting behaviors of the Ti_2AlC ceramics by nickel and aluminum fillers

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Wetting behaviors of the Ti_2AlC ceramics by nickel and aluminum fillers

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Abstract

In the present work, the behaviors of nickel and aluminum based fillers on the Ti_2AlC ceramics are studied by wetting experiments and characterization of the interface cross-section. The results show that the two kinds of fillers possess different wettability on the Ti_2AlC ceramics: the contact angle of the nickel fillers decreases continuously with rising temperature and reaches less than 20° finally, whereas that of the aluminum fillers remains larger than 135° in the full temperature range investigated. The characterization of the interface from cross-section observations reveals the presence of an interaction layer in the Ti_2AlC ceramic substrate, which promotes the wetting process.

Keywords: MAX phases; wetting; interface; reaction

1. Introduction

In recent years, a group of nanolaminate ternary carbide or nitride ceramics have attracted considerable attention from researchers because of their excellent combination of metal and ceramic properties [1, 2]. They have been systematically

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