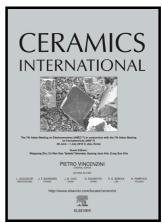
Author's Accepted Manuscript

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www.elsevier.com/locate/ceri

PII: S0272-8842(18)30856-3

DOI: https://doi.org/10.1016/j.ceramint.2018.03.279

Reference: CERI17916

To appear in: Ceramics International

Received date: 21 March 2018 Revised date: 29 March 2018 Accepted date: 31 March 2018

Cite this article as: Giovanni Bianchi, Albert Vodermayer and Alberto Ortona, Net shape CMC components produced by composite flow molding, pyrolysis and reactive silicon infiltration, *Ceramics International*, https://doi.org/10.1016/j.ceramint.2018.03.279

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Net shape CMC components produced by composite flow molding, pyrolysis and

reactive silicon infiltration

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Abstract

This paper describes a novel technique to produce net shape ceramic matrix composites (CMC) artefacts by a

modified injection moulding technique called composite flow molding, (CFM) followed by pyrolysis and

reactive silicon infiltration. The peculiarity of the produced components stands in their microstructure which is

characterized by fibres crossing the part without interruption. This new method will open the use of CMCs to

complex geometries for structural applications because they can be produced to net shape without machining and

thus interrupting the fibres.

A net shape CMC screw was manufactured, but other shapes, such as: bolts, nuts, rivets, springs and even

turbine blades can be easily produced.

Keywords: ceramic matrix composites; injection moulding; silicon carbide; silicon; net shape

1. Introduction

A ceramic matrix composite (CMC) combines a reinforcing ceramic phase with a ceramic matrix to create a

hybrid material with better mechanical properties than the corresponding homogenous materials [1]. In a CMC

the primary goal of the reinforcement is to provide toughness to a brittle ceramic matrix. Furthermore other

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