

Accepted Manuscript

Coating formed by SiBCN single source precursor via UV-photopolymerization

Weiqi He, Lixin Chen, Fei Peng

PII: S0167-577X(17)30898-4

DOI: <http://dx.doi.org/10.1016/j.matlet.2017.06.016>

Reference: MLBLUE 22728

To appear in: *Materials Letters*

Received Date: 28 March 2017

Revised Date: 31 May 2017

Accepted Date: 3 June 2017



Please cite this article as: W. He, L. Chen, F. Peng, Coating formed by SiBCN single source precursor via UV-photopolymerization, *Materials Letters* (2017), doi: <http://dx.doi.org/10.1016/j.matlet.2017.06.016>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Coating formed by SiBCN single source precursor via UV-photopolymerization

Weiqi He¹, Lixin Chen^{1*}, Fei Peng¹

¹Department of Applied Chemistry, School of Natural and Applied Sciences, Northwestern Polytechnical University, Xi'an 710072, P.R. China

*Correspondence: E-mail: lixin@nwpu.edu.cn

Abstract: Polymer derived SiBCN ceramics (PDCs) exhibit many excellent properties such as high-temperature stability and oxygen resistance. In this work, the SiBCN-containing UV-curable single source precursor a-TSEB was used as the starting material to prepare ceramic coating. The ceramic coating was prepared via spin coating, UV-polymerization and pyrolysis. The viscosity of the precursor was tested which is fluctuated around 57.75 mPa·s, means that the viscosity is low enough to coat on the surface of substrate. SEM micrographs showed that the compacted coatings are formed without any penetrating cracks or holes on samples and the interface bonding performance is good.

Key words: Ceramic coating, PDCs, SiBCN single source precursor, UV-photopolymerization

1. Introduction

SiBCN ceramics have attracted great interests for their remarkably high temperature stability, creep resistance and stability in oxygen.[1-3] Combine with its high hardness, low compressive stress, good adherence, transparency in the visible spectral region, and controllable electrical conductivity, the SiBCN ceramics can be used as protective coating, particularly suitable in high-temperature applications.[4-14] The so-called 'polymer route' (polymer derived ceramics, PDCs) that ceramics are prepared by thermolysis of polymeric precursors at elevated temperature is appropriate in preparing ceramic coating the sintering temperature could be reduced.[15,16] In this article, we choose single source precursor to be the starting material because the single source precursor has already contain all cations which are fixed to the bridging

Download English Version:

<https://daneshyari.com/en/article/5463438>

Download Persian Version:

<https://daneshyari.com/article/5463438>

[Daneshyari.com](https://daneshyari.com)