

<<陶瓷新型胶态成型工艺>>

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## <<陶瓷新型胶态成型工艺>>

### 内容概要

《陶瓷新型胶态成型工艺》系统、完整地介绍了清华大学黄勇科研组在过去20多年里在高性能陶瓷成型工艺领域取得的研究成果，同时，还论述了其他国家学者近年来在陶瓷成型领域所取得的进展。

《陶瓷新型胶态成型工艺》内容分为7章，包括：基于凝胶体系的陶瓷胶态注射成型新工艺；陶瓷基片的凝胶流延工艺；无毒或低毒体系凝胶成型工艺；陶瓷制备过程中缺陷的产生、演化、遗传和控制；非氧化物陶瓷凝胶注模成型新工艺；胶态成型工艺的应用；胶态成型工艺新方法和新技术。

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### 作者简介

黄勇，男，清华大学教授，博士生导师。

1937年出生于福建。

1962年毕业于清华大学并留校工作；1959-1961年，在南京化工学院研修硅酸盐专业。

曾先后在美国密歇根大学、麻省理工学院、瑞士联邦技术学院、澳大利亚Monash大学等担任访问学者或进行短期高访、讲学与合作研究。

曾任清华大学材料科学与工程系主任、清华大学材料科学与工程研究院常务副院长、第六和第七届全国自然科学基金委员会学科评审组成员、S-863计划软课题专家组成员、国家“八五”科技攻关计划陶瓷发动机专家组成员等，现任中国硅酸盐学会常务理事和特种陶瓷分会理事长、《硅酸盐学报》主编等。

Jinlong Yang , Born in 1966 , graduated from Beijing Institute of Technology in 1987 , graduated and got the master degree from North University of China ( NUC ) in 1990 , got the doctor degree from Tsinghua University in 1996. He had the post-doctoral experience at Department of Materials in Swiss Federal Institute of Technology ( ETH-Zurich ) from 1999 to 2000. He became a full professor in Tsinghua University in 2004 , and had the position of special-engaged professor and director of laboratory of advanced ceramics in NUC since 2006. Research fields include : structured ceramics , ceramic matrix composites , colloidal forming technology of ceramics and laser green machining of ceramics. He had won some top honors , including the second class prize of National Technology Invention for a research program by State Council of China , and "Science and Technology Advancement Prize" for other three programs awarded by the Ministry of Education and the government of Beijing respectively. He has delivered more than 100 papers , and got 30 state patents for invention.

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## 章节摘录

Tape casting process was formally applied to industrial production of ceramic capacitors in 1947, and G. N. Howatt received the franchise in 1952. This was the first ceramic patent (Howatt G. N., 1952) for tape casting for the production. In 1967, an A1203 film was successfully prepared by using tape casting by H. N. Stetson and W. J. Gyurk (Stetson H. N., et al., 1967). In the same year, IBM corporation announced that layer packaging materials for use of computer had been made by tape casting technology (Schwartz B., et al., 1967). In the 1970s, ultra-fine powder tape casting began to appear. As the technology was advanced, many new products were successfully developed, and a number of tape casting applications were grown. In 1996, capacitors with 5  $\mu\text{m}$  film were successfully fabricated by tape casting in Japan. By 1997, tape casting machinery, which could form film of 5  $\mu\text{m}$  thickness, began to appear in Japan and the U.S.A. markets. In 1998 it had been announced by researchers that the film with a thickness of 3  $\mu\text{m}$  had been obtained through tape casting technology (Rechard E., et al., 1998). Tape casting, as a processing method, is a multidisciplinary technique (Rechard E., et al., 1998) which involves ceramic technology, powder surface physical chemistry, gel chemistry, organic and polymer chemistry and so on. As tape-forming process had been put forward for several decades, and extensive studies of the process were subjected to the attention of the scientific community, it has undergone continuous improvement and enhancement.

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编辑推荐

Novel Colloidal Forming of Ceramics discusses several new near-net-shape techniques for fabricating highly reliable, high-performance ceramic parts. These techniques combine injection molding and the colloidal forming process. The book not only introduces the basic theoretical development and applications of the colloidal injection molding of ceramics, but also covers tape casting technology, the reliability of the product, and the colloidal injection molding of  $\text{Si}_3\text{N}_4$  and  $\text{SiC}$ , as well as the low-toxicity system. The book is intended for researchers and graduates in materials science and engineering. Mr. Yong Huang and Dr. Jinlong Yang are both professors at the Department of Materials Science and Engineering, Tsinghua University, China.

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