

<<陶瓷新型胶态成型工艺>>

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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。

<<陶瓷新型胶态成型工艺>>

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.

书籍目录

Chapter 1 Aqueous Colloidal Injection Molding of Ceramics Based on Gelation

1.1 Colloidal Injection Molding

1.1.1 The Concept of CIMC

1.1.2 The Flowchart of CIMC

1.1.3 The Machine of CIMC

1.2 Pressure Induced Forming

1.2.1 Effect of Hydrostatic Pressure on Solidification

1.2.2 Homogeneity of the Green Bodies

1.2.3 Controlling the Inner Stress in the Green Body

1.3 Storage Stability of Ceramic Slurries

1.3.1 The Importance of Storage Stability of Slurry

1.3.2 Chemical Stability

1.3.3 Inhibitor for Slurry Storage

1.4 To Prepare High Reliability Ceramic Parts with Complex Shapes : Aqueous Colloidal Injection Molding

References

Chapter 2 Gel-Tape-Casting of Ceramic Substrates

2.1 Fundamental Principle and Processing of Aqueous Gel-Tape-Casting

2.1.1 Tape Casting Types and the Raw Materials

2.1.2 Polymerization of the Monomer

2.1.3 Influence Factors on Polymerization of the Monomer

2.1.4 Processing of the Gel-Tape-Casting

2.2 The Characteristics of Slurries Used for Aqueous Gel-Tape-Casting

2.2.1 The Properties of the Aqueous Ceramic Slurries with Binder

2.2.2 The Influence of Dispersants on Stability and Rheology of Aqueous Ceramic Slurries with Organic Monomer

2.2.3 The Influence of Plasticizer on Properties of Aqueous Ceramic Slurry with Organic Monomer

2.2.4 The Influence of pH on the Properties of Slurries with Organic Monomer

2.2.5 The Effect of Surfactant on Wetting and Green Tape Releasing (Separating)

2.2.6 Foam and Pore Elimination

2.2.7 Sintering of Green Tape Prepared by Slurry

2.3 Aqueous Gel-Tape-Casting with Styrene-Acrylic Latex Binder

2.3.1 The Importance of Binders in Gel-Tape-Casting Process

2.3.2 The Forming Film Mechanism of Latex Binder

2.3.3 Rheological Properties of the Alumina Slurries with Binder

2.3.4 The Physical Properties and Microstructure of Green Tapes with Latex Binder

2.4 A Gel-Tape-Casting Process Based on Gelation of Sodium Alginate

2.4.1 Why Study on Tape Casting of Sodium Alginate

2.4.2 The Preparation of Aqueous Alumina Suspensions with Sodium Alginate and Calcium Phosphere Tribasic

2.4.3 Control of the Gelation of Sodium Alginate

2.4.4 Characterization of Green Tapes

2.5 The Spray Trigger Fast-Curing for the Gel-Tape-Casting Process

2.5.1 The Idea of the Spray Trigger Fast-Curing

2.5.2 Outline of the New Process

2.6 The Features and Prospects of the Aqueous Tape-Casting

References

Chapter 3 Gelation Forming Process for Low Toxicity System

3.1 Gelation Forming of Ceramic Suspension with Agarose

3.1.1 Characteristics of Agarose

3.1.2 The Effect of Agarose Contents on the Rheology of Aqueous Ceramic Suspensions

3.1.3 The Forming Courses of the Aqueous Ceramic Suspensions with Agarose

3.2 Alumina Casting Based on Gelation of Gelatine

3.2.1 Characteristics of Gelatine

3.2.2 The Gelation Process of the Ceramic Slurry with Gelatine Solution

3.2.3 The Preparation of Green Body Using Slurry with Gelatine Solution

3.3 A Casting Forming for Ceramics by Gelatine and Enzyme Catalysis

3.3.1 Research Background

3.3.2 The Gelation Mechanism of Gelatine Solution with Urea under Enzyme Catalysis

3.3.3 The Rheology and Zeta Potential of Alumina Suspension Containing Gelatine and Urea

3.3.4 The Coagulation Forming and Microstructure of Green Body

3.4 The Alumina Forming Based on Gelation of Sodium Alginate

3.4.1 Research Background

3.4.2 The Gelation Principle of Sodium Alginate

3.4.3 The Preparation Process of Alumina Green Bodies and Samples by Sodium Alginate

3.5 The Gel-Casting of SiC Based on Gelation of Sodium Alginate

3.5.1 Introduction of the Research

3.5.2 The Effect of Dispersant on the Colloidal Behaviors of the SiC Suspension

3.5.3 The Rheological Property of SiC Suspension

3.5.4 The Sedimentation Behavior of the SiC Suspension

3.5.5 The Gelation Principle and Process of the Alginate Solution

3.5.6 The Gelation of the SiC Suspension with Alginate

3.6 The Alumina Gel-Casting with a Low-Toxicity System of HEMA

3.6.1 The Academic Idea and Research Program

3.6.2 The Colloidal Chemistry and Rheological Property

3.6.3 The Binder Burnout and Application of the New System

3.7 The Synergistic Low-Toxicity Gel-Casting System by Using HEMA and PVP

3.7.1 The Academic Idea and Research Program

3.7.2 Zeta Potentials and Rheological Properties

3.7.3 The Activation Energy and Solidification

3.7.4 The Green Strengths and Microstructures

3.7.5 The Exfoliation Elimination Effect and Analysis of the Interaction between PVP and HEMA Molecules

References

Chapter 4 Generation , Development , Inheritance , and Control of the Defects during the Transformation from Suspension to Green Body

4.1 The Rheological Behaviors of Aqueous Ceramic Suspensions

4.1.1 The Rheological Behaviors of Aqueous Alumina Suspensions

4.1.2 The Effect of Rheological Properties of Suspension on Mechanical Strength of Ceramics

4.1.3 The

<<陶瓷新型胶态成型工艺>>

Effect of Solid Loading on Colloidal Forming4.2 The Generation and Development of Defects4.2.1 The Generation Mechanisms of Agglomerations in Ceramic Suspensions4.2.2 The Influences of Idle Time on Microstructures and Mechanical Properties of Green Bodies by Direct Coagulation Casting4.3 The Effect of Ionic Conductance on Preparation of Highly Concentrated Suspension4.3.1 The Academic Idea and Research Program4.3.2 The Relationship Between Ion Conductivity Constants and Solid Loading4.4 Control of Inner Stress in Green Body4.4.1 Origin , Transformation and Control of Inner Stress in Green Body4.4.2 The Release and Control of Inner Stresses in Ceramic Green Body4.5 The Suppression of Surface-Exfoliation with the Addition of Organic Agents4.5.1 The Suppression of Surface-Exfoliation by Introducing PAM into Monomer System in Suspension4.5.2 The Suppression of Surface-Exfoliation by Introducing Polyethylene Glycol into Monomer System in Suspension4.5.3 The Suppression of Surface-Exfoliation by Introducing Poly-vinylpyrrolidone (PVP) into Monomer System in SuspensionReferencesChapter 5 The Gel-Casting of Non-Oxide Ceramics5.1 The Effects of Powder Surface Modification on Concentrated Suspensions Properties of Si₃N₄5.1.1 The Contributing Factor and Elimination of Macropores in Si₃N₄ Green Bodies5.1.2 The Effect of Foreign Ions on Concentrated Suspension of Si₃N₄5.1.3 The Effect of Acid Cleaning and Calcinations on the Suspension Properties of Si₃N₄5.1.4 The Effect of Liquid Medium and Surface Group on Dispersibility of Si₃N₄ Powder5.2 The Gel-Casting of Si₃N₄ Ceramics5.2.1 The Preparation of Si₃N₄ Ceramics with Surface-Coated Si₃N₄ Powder5.2.2 The Preparation of Si₃N₄ Ceramics with Surface-Oxidized Si₃N₄ Powder.....Chapter 6 Application of New Colloidal FormingChapter 7 The New Methods and Techniques Based on Gel-CastingAppendixIndex of TermsIndex of ScholarsPostscript

<<陶瓷新型胶态成型工艺>>

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 μm film were successfully fabricated by tape casting in Japan. By 1997, tape casting machinery, which could form film of 5 μm 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 μm 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.

<<陶瓷新型胶态成型工艺>>

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 Si_3N_4 and 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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