

Table of Contents

Preface

Chapter 1: Synthesis and Properties of Cermet Materials

Liquid Phase Sintering of (Ti,W)C-Ni-Co-Cr Cermets: Microstructure and Abrasive Wear Behavior

I. Iparraguirre, L. Lozada, F. Ibarreta, R. Martinez and J.M. Sanchez 3

Effect of WC Content on the Mechanical Properties and High Temperature Oxidation Behavior of Ti(C,N)-Based Cermets

G.T. Zhang, Y. Zheng, Y.J. Zhao, W. Zhou, J.J. Zhang, Z. Ke and P. Feng 11

Effect of $Ti(C_{0.7}N_{0.3})$ Content on the Microstructure and Mechanical Properties of Ni Bonded NbC-Ti($C_{0.7}N_{0.3}$) Based Cermets

S.G. Huang, J. Vleugels, H. Mohrbacher and M. Woydt 23

Effect of Raw Materials on Properties of Coated Al_2O_3 -Al Cermet Materials via Vacuum Sintering Method

A.X. Chen, C. Yang, R.H. Wang, F. Wang, M.H. Xu, S.B. Li, J.G. Song and L. Chen 33

Influence of Ball Milling Process on the Pinned Effect of Al_2O_3 /Al Cermet Composite Powder

J.G. Song, Y. Liu, L. He, J.S. Li, W. Chen, Y. Yang, L. Chen, S. Guo, C. Yang and A.X. Chen 39

Preparation and Research of Skeletal Pt-C Compounds

X.L. Hu, Y.J. Qian, D.X. Li and X.M. Chen 45

Preparation and Characterization of Al_2O_3 -B₄C Coated Composite Powder by Hydrothermal Method

F. Wang, R.H. Wang, M.H. Xu, X.B. Bai, A.X. Chen, D.M. Du, S.B. Li, J.G. Song and L. Chen 51

Effect of Sintering Temperature on the Densification Mechanism of Al_2O_3 -Al Metal Ceramics via the Powder Metallurgy Method

J.G. Song, L. Chen, Y. Xiang, Y. Liu, S. Guo, X.L. Zhang, S.L. Guo and Y.N. Qin 57

Synthesis in SHS-Mixtures by Explosive Loading

I.V. Saikov, A.Y. Malakhov, V.G. Salamatov, S. Seropyan, I.E. Semenchuk and D.Y. Kovalev 63

Preparation and Characterization of Al_2O_3 -Al Cermet with Coated Microstructure Using Powder Metallurgy Method

R.H. Wang, A.X. Chen, D.M. Du, F. Wang, C.W. Li, Q.M. Zou, J.G. Song, L. Chen and C.W. Hao 69

Microstructure, Mechanical Properties, Sintering and Fracture Behavior of Ti(C, N) Based Cermets Granules/Ti(C, N) Based Cermets Composite

A.J. Liu, G. Li, N. Liu, K.B. Chen and H.D. Yang 75

3D Printing of Plain and Gradient Cermets with Efficient Use of Raw Materials

M. Antonov, R. Ivanov, Y. Holovenko, D. Goljandin, R. Rahmaniahranjani, L. Kollo and I. Hussainova 83

Cryomilling and Characterization of Ti/ Al_2O_3 Powders

J.Y. Wu, Q. Liu, Z.H. Wang and Z. Wang 91

Densification Technique of Al_2O_3 /Al Metal Ceramics Using Powder Metallurgy Method

Y.Y. Ju, A.X. Chen, R.H. Wang, F. Wang, M.H. Xu, D.M. Du, J.G. Song and L. Chen 97

Ti(C,N)-Based Cermets: Critical Review of Achievements and Recent Developments

W. Lengauer and F. Scagnetto 103

Chapter 2: Cermets Utilisation

Statistical Study and Multi-Response Optimization of Cutting Parameters for Dry Turning Stainless Steel AISI 316L Using Cermet Tool

Y. Touggui, S. Belhadi, S. Mechraoui, M.A. Yallese and M. Temmar 153

Comparative Study on the Microstructural and Mechanical Properties of WC-Co/AISI 1020 Steel Brazed Joint Obtained by TIG and Oxyacetylene Process

B. Cheniti, D. Miroud, P. Hvizdoš, B. Belkessa, R. Sedlák, N. Ouali and D. Allou 173

Comparative Study of some Machining Characteristics during Hard Turning of Alloy Steel with Untreated and Cryotreated Cermet Inserts	
A. Das, S.K. Patel, B.B. Biswal and A. Santoshwar	181
Tungsten Carbide-Nickel (WC-Ni) Coating as Potential Wear and Corrosion Protection for Metal	
A.S.Y. Ning, K. Zakiah, A. Ainun Rahmahwati, R. Hussin and I.S. Aida	195
Microstructure and Erosion Properties of HVOF Sprayed Cermet Coatings via Different Feedstock Powders	
W. Fu, Q.Y. Chen, X. Chen, X.B. Bai, H.T. Wang, C. Yang, G.C. Ji and H.L. Yao	201