

Spark Plasma Sintering

Current status, new developments
and challenges



Edited by
Giacomo Cao
Claude Estournès
Javier Garay
Roberto Orrù

SPARK PLASMA SINTERING: CURRENT STATUS, NEW DEVELOPMENTS AND CHALLENGES

A Review of the
Current Trends in SPS

Edited By

GIACOMO CAO

CLAUDE ESTOURNÈS

JAVIER GARAY

ROBERTO ORRÙ



ELSEVIER

Contributors

M. Ariane

Sayens Satt Grand Est, Dijon, France

F. Balima

CNRS, Univ. Bordeaux, ICMCB, Pessac, France

F. Barthelemy

DGATt, Echangeur de Guerry, Bourges, France

K. Berger

GREEN, University of Lorraine, Vandoeuvre-lès-Nancy Cedex, France

F. Bernard

ICB-UMR6303 CNRS/Burgundy University, Dijon; Sintermat Sas, Vénarey-Les-Laumes, France

P. Bernstein

Normandie Univ, ENSICAEN, UNICAEN, CNRS, CRISMAT, Caen, France

G. Cao

Department of Mechanical, Chemical and Materials Engineering, Research Unit of the National Interuniversity Consortium of Materials Science and Technology (INSTM), University of Cagliari, Cagliari, Italy

K.T. Chan

Advanced Materials Processing and Synthesis (AMPS) Lab, Materials Science & Engineering Program and Mechanical & Aerospace Engineering Department, University of California, San Diego, CA, United States

G. Chevallier

CIRIMAT, Université de Toulouse; CIRIMAT, CNRS, Université Toulouse III—Paul Sabatier, Toulouse, France

U.-C. Chung

CNRS, Université de Bordeaux, ICMCB, UMR 5026, Pessac, France

M. Cologna

European Commission, Joint Research Centre (JRC), Karlsruhe, Germany

H. Couque

NEXTER Munitions, Bourges, France

R. Cury

Plansée Tungsten Alloys, Saint-Pierre-en-Faucigny, France

S. Cygan

Centre for Materials Research and Sintering Technology, Institute of Advanced Manufacturing Technology, Krakow, Poland

H. Debéda

Université de Bordeaux, IMS, UMR 5218, Talence, France

D. Delagnes

Clément Ader Institute (ICA), University of Toulouse, CNRS, Mines Albi, INSA, UPS, ISAE-SUPAERO, Toulouse, France

L. Dupont

Normandie Univ, ENSICAEN, UNICAEN, CNRS, CRISMAT, Caen, France

L. Durand

CEMES, CNRS UPR 8011 and University of Toulouse, Toulouse, France

C. Elissalde

CNRS, Université de Bordeaux, ICMCB, UMR 5026, Pessac, France

C. Estournès

CIRIMAT, Université de Toulouse; CIRIMAT, CNRS, Université Toulouse III—Paul Sabatier, Toulouse, France

J.E. Garay

Advanced Materials Processing and Synthesis (AMPS) Lab, Materials Science & Engineering Program and Mechanical & Aerospace Engineering Department, University of California, San Diego, CA, United States

S. Grasso

Queen Mary University of London, London, United Kingdom; Key Laboratory of Advanced Technologies of Materials, Ministry of Education, School of Materials Science and Engineering, Southwest Jiaotong University, Chengdu, China

F. Gucci

Queen Mary University of London, London, United Kingdom

M. Higuchi

Superconducting Materials Laboratory, Graduate School of Science & Engineering, Shibaura Institute of Technology, Tokyo, Japan

J. Huez

CIRIMAT, University of Toulouse, CNRS, INP-ENSIACET, Toulouse, France

L. Jaworska

Centre for Materials Research and Sintering Technology, Institute of Advanced Manufacturing Technology, Krakow, Poland

P. Klimczyk

Centre for Materials Research and Sintering Technology, Institute of Advanced Manufacturing Technology, Krakow, Poland

Y. Kodera

Advanced Materials Processing and Synthesis (AMPS) Lab, Materials Science & Engineering Program and Mechanical & Aerospace Engineering Department, University of California, San Diego, CA, United States

M. Kubota

Department of Mechanical Engineering, College of Industrial Technology, Nihon University, Narashino, Japan

U. Kus

CIRIMAT, Université de Toulouse; CIRIMAT, CNRS, Université Toulouse III—Paul Sabatier; CIRIMAT, University of Toulouse, CNRS, INP-ENSIACET, Toulouse, France

A. Largeteau

CNRS, Univ. Bordeaux, ICMCB, Pessac, France

P. Mahot

Planse Tungsten Alloys, Saint-Pierre-en-Faucigny, France

C. Manière

CIRIMAT, Université de Toulouse; CIRIMAT, CNRS, Université Toulouse III—Paul Sabatier; CEMES, CNRS UPR 8011 and University of Toulouse, Toulouse, France

M.R. Mphahlele

Centre for Nanomechanics & Tribocorrosion, School of Mining, Metallurgy & Chemical Engineering, University of Johannesburg, Johannesburg, South Africa

Z.A. Munir

Department of Materials Science and Engineering, University of California, Davis, CA, United States

M. Murakami

Superconducting Materials Laboratory, Graduate School of Science & Engineering, Shibaura Institute of Technology, Tokyo, Japan

M. Muralidhar

Superconducting Materials Laboratory, Graduate School of Science & Engineering, Shibaura Institute of Technology, Tokyo, Japan

F. Naimi

ICB-UMR6303 CNRS/Burgundy University, Dijon; Sintermat Sas, Vénarey-Les-Laumes, France

J. Noudem

Normandie Univ, ENSICAEN, UNICAEN, CNRS, CRISMAT, Caen, France

M. Ohyanagi

Department of Materials Chemistry, Faculty of Science and Technology, Ryukoku University, Ohtsu, Japan

E.A. Olevsky

Powder Technology Laboratory, College of Engineering, San Diego State University, San Diego, CA, United States

P.A. Olubambi

Centre for Nanomechanics & Tribocorrosion, School of Mining, Metallurgy & Chemical Engineering, University of Johannesburg, Johannesburg, South Africa

R. Orrù

Department of Mechanical, Chemical and Materials Engineering, Research Unit of the National Interuniversity Consortium of Materials Science and Technology (INSTM), University of Cagliari, Cagliari, Italy

M. Prakasam

CNRS, Univ. Bordeaux, ICMCB, Pessac, France

M. Reece

Queen Mary University of London, London, United Kingdom

R. Retoux

Normandie Univ, ENSICAEN, UNICAEN, CNRS, CRISMAT, Caen, France

M.-I. Rúa-Taborda

Université de Bordeaux, IMS, UMR 5218, Talence; CNRS, Université de Bordeaux, ICMCB, UMR 5026, Pessac, France

T. Saunders

Queen Mary University of London, London, United Kingdom

V. Tyrpek

Department of Inorganic Chemistry, Faculty of Science, Charles University, Prague 2, Czech Republic

A.D. Volodchenkov

Advanced Materials Processing and Synthesis (AMPS) Lab, Materials Science & Engineering Program and Mechanical & Aerospace Engineering Department, University of California, San Diego, CA, United States

A. Weibel

CIRIMAT, Université de Toulouse; CIRIMAT, CNRS, Université Toulouse III—Paul Sabatier, Toulouse, France