

Science and Engineering of Novel Superconductors V

von
P. Vincenzini, A. Rigamonti

1. Auflage

[Science and Engineering of Novel Superconductors V – Vincenzini / Rigamonti](#)

schnell und portofrei erhältlich bei [beck-shop.de](#) DIE FACHBUCHHANDLUNG

Thematische Gliederung:

[Halb- und Supraleitertechnologie](#)

Trans Tech Publications, Zürich 2006

Verlag C.H. Beck im Internet:

www.beck.de

ISBN 978 3 908158 03 5

Table of Contents

Committee

Preface

Session 1 - Materials, Synthesis, Phase Equilibria, Structure, Physical Chemistry

Magnetic Mapping - A Way to Test and Understand Current Flows in Thin and Bulk Superconductors

X. Granados, S. Iliescu, B. Bozzo, E. Bartolome, T. Puig, X. Obradors, J. Amorós and M. Carrera 1

Highly Densified MgB₂ Bulks by Reactive Mg Liquid Infiltration

G. Giunchi, G. Ripamonti, E. Perini, S. Ginocchio, E. Bassani and T. Cavallin 7

Progress in the Continuous Deposition of YBCO Coated Conductors by Thermal Co-Evaporation

E. Gilioli, A. Gauzzi, M. Bindi, S. Rampino, F. Pattini, F. Bissoli, S. Ginocchio, M. Baldini and S. Zannella 17

High-Pressure High-Temperature Synthesis of Nanostructural Magnesium Diboride for Electromotors and Devices Working at Liquid Hydrogen Temperatures

T. Prikhna, W. Gawalek, Y. Savchuk, N. Sergienko, V. Moshchil, S.N. Dub, V. Sverdun, L. Kovalev, V. Penkin, O. Rozenberg, M. Zeisberger, M. Wendt, G. Fuchs, C. Grovenor, S. Haigh, V.S. Melnikov and P. Nagorny 25

High Pressure High Temperature (HPHT) Synthesis and Physical Characterization of Magneto-Superconducting RuSr₂Tb_{1.5}Ce_{0.5}Cu₂O₁₀ Ceramic Compound

A. Ubaldini, V.P.S. Awana, S. Balamurugan and E. Takayama-Muromachi 31

Synthesis of YBa₂Cu₃O_{7-δ} Using Oxalate Precursors and Sol-Gel Method

A. Bustamante D., A.M. Osorio A., L. De Los Santos V., H. Carhuacho A., J.C. González G., G.R.C. Cernicchiaro and J.A. Feijoo L. 37

Growth of Bi-Pb-Sr-Ca-Cu-O Films by Organic Chemical Spray Pyrolysis Deposition

E. Díaz-Valdés, E. Castillo-Apodaca, C. Mejía-García and G.S. Contreras-Puente 43

Preparation of Strontium Vanadate Sr₃V₂O₈ as Additive to Bi-Based Superconductors

K. Rubešová and D. Sýkorová 49

MgB₂ Films, Fibres and Heterostructures Grown by an Innovative Hybrid Physical-Chemical Vapor Deposition Technique

P. Orgiani, Y. Cui, J. Chen, V. Ferrando, A.V. Pogrebnnyakov, J.M. Redwing, Q. Li and X.X. Xi 55

Change of Superconducting Parameters of Y-Ba-Cu-O Slabs and Rings due to High-Energy Ion Beams

I. Kirschner, A. Balogh, C. Mészáros, R. Laiho, G. Kovács and S. Leppävuori 63

Session 2 - Physical Properties and Characterization

Interband Pairing Interaction in Magnesium Diboride Probed by Tunneling Spectroscopy

R. Schneider, J. Geerk, A.G. Zaitsev, R. Heid, K.P. Bohnen and H. von Löhneysen 69

Point-Contact Spectroscopy in Doped and Irradiated MgB₂

D. Daghero, R.S. Gonelli, A. Calzolari, G.A. Ummarino, M. Tortello, V.A. Stepanov, N.D. Zhigadlo, K. Rogacki, J. Karpinski and M. Putti 75

Mechanical Properties and Fractographical Analysis by Laser Scanning Confocal Microscopy (LSCM) of Laser Textured Bi(Pb)-2212 Superconducting Materials

F. Capel, M.A. Madre, A. Sotelo, M. Mora, J.C. Diez and J.M. López-Cepero 82

Application of Laser Technique on the Formation of Superconductive Layer on the Bulk of Press Formed Bi System - Evaluation of Mechanical Properties of the Treated Bulk

H. Miyazawa, K. Hotta, H. Shimizu, M. Morita and H. Hirose 88

Basic Characteristics of the Single Layer Type Microwave Absorber in X Band Using Superconductor Powder

K. Hotta, H. Shimizu, Y. Watanabe and H. Hirose 93

Fluctuating Diamagnetism in the Critical Region of the Superconducting Transition in Lead Nanoparticles

E. Bernardi, A. Lascialfari, A. Rigamonti, L. Romanò, V. Iannotti, G. Ausanio and C. Luponio 98

Properties of Ag Doped Bi-Superconductors Prepared by Solid State and Sol-Gel Methods D. Sýkorová, O. Smrčková and P. Vašek	104
Effect of Co Doping on the Superconducting Properties of Overdoped $(\text{Lu}_{0.8}\text{Ca}_{0.2})\text{Ba}_2\text{Cu}_3\text{O}_z$ H.K. Lee	108
Scaling of Resistivities in MgB_2 P. Vašek	113
Transport Properties over Critical Currents for Ag-Sheathed $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_8$ Superconductors with Different E-J Dependence K. Watanabe, T. Inoue, S. Awaji, G. Nishijima, K.I. Takahashi and V.R. Romanovskii	118

Session 3 - Processing and Related Phenomena

Progress of YBCO Coated Conductor in JAPN and Recent Advance of PLD and IBAD Method Y. Yamada, T. Izumi and Y. Shiohara	124
MgB_2 Composite Superconductors Made by Ex Situ and In Situ Process P. Kováč, I. Hušek and T. Melišek	131
Fabrication and Evaluation of Ag-Bi2223 Composite Tapes with Interfilamentary Resistive Barriers R. Inada, Y. Iwata, Y. Nakamura, A. Oota and P.X. Zhang	137
Preparation and Properties of Advanced MgB_2 Wires and Tapes W. Goldacker and S.I. Schlachter	143
Sol-Gel Ink-Jet Printing Technique for Synthesis of Buffer Layers of Coated Conductors V. Cloet, M.C. Cordero-Cabrera, T. Mouganie, B.A. Glowacki, M. Falter, B. Holzapfel, J. Engell, M. Bäcker and I. Van Driessche	153
Fabrication of $\text{Bi}_2\text{Sr}_2\text{Ca}_{n-1}\text{Cu}_n\text{O}_y$ / Al_2O_3-Particles on MgO Films by rf Magnetron Sputtering Method T. Yamane, S. Kishida, H. Tanaka, H. Yoshikawa and H. Imao	159
Preparation of Partial-Melted Sm-Ba-Cu-O Bulk Superconductor H. Imao, K. Matsumoto and S. Kishida	165

Session 4 - Small Scale and Electronic Devices, Applications

Logic Operation of SFQ Circuit Elements Made of YBCO Junctions Y. Tarutani, K. Tsubone, H. Wakana, S. Adachi, Y. Ishimaru, K. Nakayama, Y. Oshikubo, O. Horibe and K. Tanabe	170
Recent Progress in Rapid-Single-Flux-Quantum Circuits A. Fujimaki, T. Yamada, M. Tanaka, H. Akaike, N. Yoshikawa, H. Terai and S. Yorozu	180
Progress of RSFQ High Performance Packet Switch S. Yorozu, Y. Hashimoto, Y. Kameda and T. Miyazaki	188

Session 5 - Large Scale Components, Devices and Applications

Concepts for HTS and MgB_2 in Transformers P. Tixador	195
Development of a Superconducting Transformer for Rolling Stock H. Fujimoto, H. Hata, H. Kamijo, K. Nagashima, K. Ikeda, M. Iwakuma, K. Funaki, H. Yamada, Y. Sanuki, A. Tomioka, K.E. Uamori and S. Yoshida	204
kA-Class High-Current HTS Conductors and Windings for Large Scale Applications M. Leghissa, V. Hussennether and H.W. Neumüller	212
Development of an HTS Power Cable Based on YBCO Tapes S. Mukoyama, M. Yagi, N. Kashima, Y. Yamada and Y. Shiohara	220
Status and Prospects of HTS Synchronous Machines H.W. Neumüller, G. Klaus and W. Nick	228
Long Length MgB_2 Conductors for Industrial Applications A. Malagoli, G. Grasso, M. Vignolo, A. Tumino, V. Braccini, C. Bernini, M. Tropeano, A.S. Siri, D. Nardelli and M. Modica	238
Prospects of Application of Superconductivity in Underground Transmission Lines and Levitating Trains B.A. Glowacki	246