

Program

3rd International Conference on Electrophoretic Deposition: Fundamentals and Applications

October 5 – 9, 2008

Awaji Yumebutai Intl. Conference Center, Japan

Conference Co-chairs:

Prof. A. R. Boccaccini

Department of Materials
Imperial College London, UK

Prof. O. Van der Biest

Department of Metallurgy and Materials Engineering
Katholieke Universiteit Leuven, Belgium

Prof. R. Clasen

Department of Powder Technology
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Sunday, October 5, 2008

16:00 – 18:00 Registration (Westin Hotel)
18:00 – 20:00 Welcome Reception and Dinner (Westin Hotel)

NOTES

- **Technical sessions will be held in Reception Hall B in the conference center.**
- **Vouchers will be distributed at registration for lunches (Mon, Tues, Wed. and Thurs.) and for dinners on Monday and Tuesday.**
- **Breakfasts will be in the Westin Hotel.**

- Audiotaping, videotaping and photography of presentations are strictly prohibited.
- Speakers – Please leave at least 5 minutes for questions and discussion.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Be sure to make any corrections to your name/contact information on the Master Participant List or confirm that the listing is correct. A corrected copy will be sent to all participants after the conference.

Monday, October 6, 2008

07:30 – 08:30 Breakfast

SESSION I: ADVANCED EXPERIMENTAL TECHNIQUES

Session Chair: O. van der Biest

08:30 – 08:50 FAST DEPOSITION OF SURFACE STRUCTURES BY TWO-STEP-EPD
Alexander Nold, Johannes Zeiner, Rolf Clasen, Department of Powder Technology for Glass and Ceramics, Saarbrücken, 66123, Germany

08:50 – 09:10 STUDY OF THE DEPOSIT RESISTANCE DURING ELECTROPHORETIC DEPOSITION
Linda Stappers, Li Zhang, Omer Van der Biest, Jan Fransaer, Katholieke Universiteit Leuven, Belgium

09:10 – 09:30 BEHAVIOUR OF THE LOCAL ELECTRIC FIELD DURING ELECTROPHORETIC DEPOSITION OF AN ALUMINA SUSPENSION ON A MEMBRANE
H. Elsenheimer, IMTEK, University of Freiburg; Institute for Materials Research III, Forschungszentrum Karlsruhe, Germany, J. Tabellion, Schunk Group, Germany, J. Haußelt, IMTEK, University of Freiburg; Institute for Materials Research III, Forschungszentrum Karlsruhe, Germany

09:30 – 09:50 POSSIBILITY AND DIVERSITY OF ELECTROPHORETIC DEPOSITION IN A STRONG MAGNETIC FIELD
Tetsuo Uchikoshi, Tohru S. Suzuki, Yoshio Sakka, National Institute for Materials Science, Ibaraki, Japan

09:50 – 10:10 CERAMIC COATING ON METAL SUBSTRATE BY ELECTROPHORETIC DEPOSITION ASSISTED BY SWEEPING FLOW IN AQUEOUS SUSPENSION
Takamasa Mori, Naoya Hirasawa, Ryuta Ito, Junichiro Tsubaki, Nagoya University, Japan

10:10 – 10:40 Coffee Break

SESSION I: ADVANCED EXPERIMENTAL TECHNIQUES (continued)

Session chair: Jan Ma

10:40 – 11:00 AQUEOUS ELECTROPHORETIC DEPOSITION AT HIGH ELECTRIC FIELDS
Bram Neirinck, Jan Fransaer, Jef Vleugels, Omer Van der Biest, Department of Metallurgy and Materials Engineering (MTM), K.U.Leuven, Belgium

11:00 – 11:20 PULSED-DC ELECTROPHORETIC DEPOSITION (EPD) OF AQUEOUS ALUMINA SUSPENSION FOR CONTROLLING BUBBLE INCORPORATION AND DEPOSIT MICROSTRUCTURE
Laxmidhar Besra, Tetsuo Uchikoshi, Tohru S. Suzuki, Yoshio Sakka, National Institute for Materials Science, Ibaraki, Japan

11:20 – 11:40 THE ROLE OF THE SURFACE CHEMISTRY OF COMPLEX OXIDES IN THEIR SHAPING BY EPD
Begoña Ferrari, Instituto de Cerámica y Vidrio, Madrid, Spain, Laurent Dusoulier, Rudy Cloots, Université de Liège, Belgium, Julián Morales, Lourdes Henán, Alvaro Caballero, Universidad de Córdoba, Spain, Rodrigo Moreno, Instituto de Cerámica y Vidrio, Spain

Monday, October 6, 2008 (continued)

- 11:40 – 12:00 NEAR NET SHAPING WITH BIMODAL POWDERS ON SHAPED MEMBRANES
Rolf Clasen, Thomas Assion, Christian Oetzel, Department of Powder Technology for Glass and Ceramics, Saarbrücken, Germany
- 12:00 – 12:20 THE ROLE OF PARTICLE CONCENTRATION IN ELECTROPHORETIC DEPOSITION: AN EXPERIMENTAL AND THEORETICAL STUDY
Simona Radice, Philippe Kern, Johann Michler, EMPA, Swiss Federal Laboratories for Materials Testing and Research, Thun, Switzerland, Stefano Mischler, Ecole Polytechnique Fédérale de Lausanne, Switzerland
- 12:30 – 14:00 Lunch
- 14:00 – 17:30 *Ad hoc* sessions and/or free time
- 16:30 – 17:00 Afternoon Coffee
- SESSION II: NANOSTRUCTURED MATERIALS AND FILMS***
Session chair: J. Dickerson
- 17:00 – 17:30 **Keynote**
ELECTROPHORETIC DEPOSITION OF NANOPARTICLE THIN FILMS: RECENT DEVELOPMENTS AND NEW DIRECTIONS
James H. Dickerson, Vanderbilt University, Nashville, USA
- 17:30 – 17:50 ELECTROPHORETIC DEPOSITION AND PHOTOCATALYTIC ACTIVITY OF TITANATE NANOSHEETS
Tomohisa Kambayashi, Yusuke Daiko, Hiroyuki Muto, Mototsugu Sakai, Atsunori Matsuda, Department of Materials Science, Toyohashi University of Technology, Japan
- 17:50 – 18:10 ELECTROPHORETIC DEPOSITION OF TUNGSTEN OXIDE NANORODS FOR ELECTROCHROMIC APPLICATIONS
Jan Ma, Pooi See Lee, Eugene Khoo, Wang Jinming, Nanyang Technological University, Singapore
- 18:10 – 18:30 INCORPORATION OF OXIDE NANOPARTICLES INTO BARRIER-TYPE ALUMINA FILM VIA ANODIC OXIDATION COMBINED WITH ELECTROPHORETIC DEPOSITION
Kai Kamada, Masaaki Tokutomi, Naoya Enomoto, Junichi Hojo, Kyushu University, Japan
- 18:30 – 18:50 THE PRODUCTION OF NANOSTRUCTURED ALUMINA CERAMICS BY ELECTROPHORETIC DEPOSITION
Katja König, Saša Novak, Spomenka Kobe, Jozef Stefan Institute, Slovenia
Aldo R. Boccaccini, Imperial College London, UK
- 18:50 – 19:10 SYNERGISM OF THE EPD AND THE LIQUID-PHASE SYNTHESSES: THIN FILMS OF NANO-YSZ PREPARED UNDER HYDROTHERMAL CONDITIONS
Begoña Ferrari, Isabel Gonzalo-Juan, María Teresa Colomer, Instituto de Cerámica y Vidrio, Madrid, Spain
- 19:30 – 21:00 Dinner
- 21:00 – 22:00 Social Hour

Tuesday, October 7, 2008

07:30 – 08:30 Breakfast

SESSION III: EPD INTEGRATED MANUFACTURING TECHNOLOGIES

Session chair: Aldo R. Boccaccini

08:50 – 09:10 ELECTROPHORETIC MEA FABRICATION FOR HIGH PERFORMANCE DMFC
Kiyoshi Kanamura, Suguru Oomori, Hirokazu Munakata, Tokyo Metropolitan University, Japan

09:10 – 09:30 PREPARATION OF NASICON-BASED CERAMIC THICK-FILM WITH ELECTROPHORETIC DEPOSITION FOR SOLID-STATE PHOTOLUMINESCENCE DEVICE
Youichi Shimizu, Satoko Takase, Masataka Imamura, Ikuhiro Koguma, Kyushu Institute of Technology, Fukuoka, Japan

09:30 – 09:50 ROLE OF SUSPENSION MEDIA IN ELECTROPHORETIC DEPOSITION OF LOW LOSS DIELECTRIC BAND 2Ti5O14 THICK FILMS
Paula M. Vilarinho, Fu Zhi, Aiving Wu, University of Aveiro, Portugal, Angus Kingon, Brown University, USA

09:50 – 10:10 FORMATION OF CRYSTALLINE-ORIENTED TITANIA THIN FILMS ON ITO GLASS ELECTRODES BY ELECTROPHORETIC DEPOSITION IN A STRONG MAGNETIC FIELD
Mamiko Kawakita, University of Tsukuba, Japan

10:10 – 10:30 ELECTROPHORETIC DEPOSITION OF ZRO2 BASED SYSTEMS: BI-COMPONENT STUDIES CONCERNING SELF-ASSEMBLIES
Ricardo H. R. Castro, Paulo K. Kodama, Department of Materials Engineering - FEI University Center, Brazil, Douglas Gouvêa, Department of Metallurgical and Materials Engineering, University of Sao Paulo, Brazil

10:30 – 11:00 Coffee Break

SESSION IV: FUNCTIONAL FILMS AND DEPOSITS

Session chair: A. Matsuda

11:00 – 11:20 LEAD-ZIRCONATE-TITANATE PEROVSKITE THICK-FILMS PREPARED BY ELECTROPHORETIC DEPOSITION
Danjela Kuscer, Jozef Stefan Institute, Slovenia

11:20 – 11:40 ELECTROPHORETIC DEPOSITION OF STAR POLYMER-EUROPIUM CHALCOGENIDE NANOCOMPOSITE FILMS
Suseela Somarajan, Saad A. Hasan, Melissa A. Harrison, Sameer V. Mahajan, Chinessa T. Adkins, Eva Harth, James H. Dickerson*, Department of Physics and Astronomy, Vanderbilt University, USA

11:40 – 12:00 ELECTROPHORETIC DEPOSITION/INFILTRATION OF NATURAL ZEOLITE PARTICLES ON/INTO VARIOUS SUBSTRATES
Shigeo Hayashi, Junpei Onoe, Kazuyoshi Ebina, Nobuhiro Kodama, Akita University, Japan

Tuesday, October 7, 2008 (continued)

- 12:00 – 12:20 EFFECTS OF SOME SALTS ADDITIONS TO ACETONE ON THE MORPHOLOGY OF PORCELAIN PARTICLE DEPOSITS OBTAINED BY EPD
Gregorio Vargas, Maria M Rojas, Georgina Garcia, Alejandra Chavez, Cinvestav Saltillo, Mexico
- 12:20 – 12:40 ELECTROPHORETIC DEPOSITION OF NATURAL HYDROXYAPATITE
Mehdi Javidi, Shiraz University, Iran, Jan Ma, Nanyang Technological University, Singapore
- 13:00 – 14:30 Lunch
- 14:30 – 16:30 **Optional excursion**
Ad hoc sessions and/or free time
- 16:30 – 17:00 Afternoon Coffee
- SESSION V: EPD OF CARBON NANOTUBES***
Session Chair: R. Clasen
- 17:00 – 17:20 DEPOSITION OF MULTIWALL CARBON NANOTUBES USING LOW FREQUENCY ALTERNATING ELECTROPHORETIC DEPOSITION
Babak Raissi, Amir Reza Gardeshzadeh, Ehsan Marzbanrad, Materials and Energy Research Center, Iran
- 17:20 – 17:40 ELECTROPHORETIC DEPOSITION (EPD) OF CARBON NANOTUBES AND INORGANIC NANOPARTICLES
Johann Cho, Aldo R Boccaccini, Imperial College London, UK
- 17:40 – 18:00 ELECTROPHORETIC DEPOSITION AND CHARACTERIZATION OF EU2O3 NANOCRYSTAL AND CARBON NANOTUBE HETEROSTRUCTURES
Sameer V. Mahajan, Interdisciplinary Program in Materials Science, Vanderbilt University, Nashville, USA, J. Cho, M. Shaffer, A. R. Boccaccini, Imperial College, London, UK, J. H. Dickerson, Vanderbilt University, Nashville, USA
- 18:10 – 18:30 ELECTROPHORETIC DEPOSITION AND PROPERTIES OF TIO2 NANOPARTICLE COATINGS ON SILVER, ITO AND CNT/POLYMER COMPOSITE
R.S. Hyam, T.C. Jagdale, Chetan Chenamall, J. P. Jog, S.B. Ogale, Physical and Materials Chemistry Division, National Chemical Laboratory (NCL), Maharashtra, India
- 18:30 – 19:30 ***SESSION VI: POSTER SESSION***
- 19:30 – 21:00 Dinner
- 21:00 – 22:00 Social Hour and continuation of Poster session

Wednesday, October 8, 2008

07:30 – 08:30 Breakfast

SESSION VII: EPD IN INDUSTRIAL APPLICATIONS: COATINGS

Session Chair: A.R. Boccaccini

08:30 – 09:00 **Keynote**
INTERMEDIATE SCALE PRODUCTION OF CERAMICS AND CERAMIC COATINGS BY EPD
John S Blackburn, Ionotec Ltd, Cheshire, United Kingdom

09:00 – 09:20 DEVELOPING AN ELECTROPHORETICALLY DEPOSITABLE SELF-LUBRICATING NANOCOMPOSITE PAINT PROCESS FOR A SHORT RECOIL SEMI-AUTOMATIC HANDGUN APPLICATION.
Peter Hope, LVH Coatings Ltd., Birmingham, UK

09:20 – 09:40 ELECTROPHORETIC DEPOSITION OF YSZ COATINGS ON METAL SUBSTRATES
Hui Xu, Ian P Shapiro, Ping Xiao, School of Materials, University of Manchester, UK

09:40 – 10:00 INFLUENCE OF WATER ON THE PREPARATION OF MESOPOROUS SILICA THICK COATING BY ELECTROPHORETIC DEPOSITION METHOD
Hideyuki Negishi, Akira Endo, National Institute of Advanced Industrial Science and Technology (AIST), Japan, Ai Miyamoto, Tokyo University of Science, Japan, Keiji Sakaki, Takao Ohmori, National Institute of Advanced Industrial Science and Technology (AIST), Japan

10:00 – 10:30 SINTERING OF CERAMIC COATINGS ON A METAL SUBSTRATE
Ian P Shapiro, Hui Xu, Ping Xiao, School of Materials, University of Manchester, UK

10:30 – 11:00 Coffee Break

SESSION VIII: APPLICATIONS IN SOFCS AND COMPOSITES

Session Chair: S. Novak

11:00 – 10:20 ELECTROPHORETIC DEPOSITION AS PREPARATION METHOD FOR INTERMEDIATE TEMPERATURE SOFC HALF CELLS
Christian Szepanski, Jana Grosse-Brauckmann, Christos Argirusis, Clausthal University of Technology, Institute of Metallurgy, Germany

11:20 – 11:40 ALUMINA AND ZIRCONIA BASED COMPOSITES: PART 1 PREPARATION
Hynek Hadraba, Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Karel Maca, Faculty of Mechanical Engineering, Brno University of Technology, Zdenek Chlup, Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Brno, Czech Republic

11:40 – 12:00 INFILTRATION OF A 3-D FABRIC FOR THE PRODUCTION OF SIC/SIC COMPOSITES BY MEANS OF ELECTROPHORETIC DEPOSITION
Saša Novak, Katja Koenig, Aljaž Ivekovič, Petra Uršnik, Jozef Stefan Institute, Slovenia

12:00 – 12:20 ELECTROPHORETIC FABRICATION OF YSZ ELECTROLYTE FILM ON NON-CONDUCTING POROUS NIO-YSZ COMPOSITE SUBSTRATES FOR SOFC APPLICATIONS
Motohide Matsuda, Takushi Hosomi, Michihiro Miyake, Graduate School of Environmental Science, Okayama University, Japan

12:20 – 13:00 Discussion

Wednesday, October 8, 2008 (continued)

13:00 – 14:00 Lunch

14:00 – 16:30 *Ad hoc* sessions and/or free time

16:30 – 17:00 Afternoon Coffee

SESSION IX: EPD IN CERAMIC PROCESSING

Session chair: T. Uchikoshi

17:00 – 17:20 ELECTROPHORETICALLY DEPOSITED POROUS CERAMICS AND THEIR CHARACTERISATION BY X-RAY COMPUTER TOMOGRAPHY
Kirsten Moritz, Technical University Bergakademie Freiberg, Germany, Tassilo Moritz, Fraunhofer Institute for Ceramic Technologies and Systems, Germany

17:20 - 17:40 ELECTROPHORETIC DEPOSITION OF TITANIA NANO POWDERS
Mohamad Ghorbani, Milad Roushanafshar, Sharif University of Technology, Tehran, Iran

17:40 – 18:00 DEVELOPMENT OF TEXTURED α -ALUMINA THROUGH ELECTROPHORETIC DEPOSITION AND TEMPLATED GRAIN GROWTH
L. Zhang, A. K. Kanjarla, J. Vleugels, O. Van der Biest, Department of Metallurgy and Materials Engineering, Katholieke Universiteit Leuven, Belgium

18:00 – 18:20 PREPARATION AND ELECTROPHORETIC DEPOSITION OF AN YTTRIUM SILICATE PRECURSOR SOL
Jana Grosse-Brauckmann, Günter Borchardt, Christos Argirusis, Clausthal University of Technology, Institute of Metallurgy, Germany

18:20 - 18:40 CONTROLLING OF SURFACE PARAMETERS OF PARTICLES USED FOR ELECTROPHORETIC DEPOSITION
Cornelia Bellmann, Anja Caspari, Karina Grundke, Leibniz Institute of Polymer Research Dresden, Germany

18:40 – 19:00 AGING BEHAVIOR OF YITTRIA STABILIZED ZIRCONIA (YSZ) IN NON AQUEOUS SUSPENSIONS FOR ELECTROPHORETIC DEPOSITION APPLICATION
Iman Azarian Borojeni, Babak Raissi Dehkordi, Amir Maghsoudipour, Mahmood Kazemzad, Ehsan Marzbanrad, Materials and Energy Research Centre, Tehran, Iran

20:00 – 22:00 Conference Banquet (Westin Hotel)

Thursday, October 9, 2008

07:30 – 08:30 Breakfast

SESSION X: NOVEL APPROACHES

Session chair: B. Ferrari

- 08:30 – 08:50 ELECTROPHORETIC DEPOSITION OF LIQUID TEMPLATES
B. Neirinck, J. Fransaer, O. Van der Biest, J. Vleugels, Department of Metallurgy and Materials Engineering (MTM), K.U.Leuven, Belgium
- 08:50 – 09:10 ELECTROPHORETIC DEPOSITION AS A TOOL FOR THE SEPARATION OF PROTEIN-INCLUSION BODIES FROM HOST BACTERIA IN SUSPENSION
Saša Novak, Jožef Stefan Institute, Slovenia, Uroš Maver, National Institute for Chemistry, Slovenia, Katja Koenig, Jožef Stefan Institute, Slovenia, Špela Peternel, Marjan Bele, National Institute for Chemistry, Slovenia
- 09:10 – 09:30 TAILORED DIELECTRIC PROPERTIES OF BAND2TIO14 FILMS FABRICATED BY ELECTROPHORETIC DEPOSITION
Paula M. Vilarinho, Fu Zhi, A. Wu, University of Aveiro, Portugal, Angus Kingon, Brown University, USA
- 09:30 – 09:50 CONTROL OF RESIDUAL STRESS IN MULTILAYERED ALUMINA PREPARED USING ELECTROPHORETIC DEPOSITION IN A STRONG MAGNETIC FIELD
Tohru S. Suzuki, Tetsuo Uchikoshi, Yoshio Sakka, National Institute for Materials Science, Ibaraki, Japan
- 09:50 – 10:10 LOCAL ELECTROPHORETIC DEPOSITION WITH COAXIAL ELECTRODES
Alexander Nold, Thomas Assion, Johannes Zeiner, Rolf Clasen, Department of Powder Technology for Glass and Ceramics, Saarbrücken, Germany
- 10:10 – 11:00 Discussion and Conclusions
NEXT EPD CONFERENCE,
INDUSTRIAL INVOLVEMENT, SCIENTIFIC NETWORK ON EPD,
INCREASE PARTICIPATION OF “ELECTROCHEMISTRY COMMUNITY”,
EDUCATIONAL MATTERS, ETC.)
- 12:00 – 13:00 Lunch and adjournment