



20th BIENNIAL EUROPEAN CONFERENCE
ON CHEMICAL VAPOR DEPOSITION

EuroCVD20

Invitation and Program



Sempach, Switzerland
July 13–17, 2015

Conference information: <http://eurocvd20.empa.ch>

CO-ORGANIZERS OF THE CONFERENCE



HERALD

Hooking together European research
in Atomic Layer Deposition



WELCOME NOTE



Dear friends and colleagues,

The EuroCVD20 conference takes place at Sempach in Switzerland from 12. July 2015 until 17. July 2015. We are pleased to announce that contributions from all five continents have been accepted by the scientific committee, and 65 of them will be presented as oral presentations in the single Symposium program. More than 100 posters will be shown and explained by the authors in 4 separate poster sessions, giving time for in depth discussions of the presented findings. Most of the relevant CVD topics are covered in the program, guaranteeing a broad overview of advances in classical thermal CVD and related fields such as liquid injection CVD, Atomic Layer Deposition (ALD), assisted CVD by plasma, or localized by focused electron beam induced deposition (FEBID).

I am very grateful to the co-organization of the conference by the COST actions HERALD and the Swiss Association for Materials Science and Technology – SVMT, and to the sponsors of the conference.

Following the tradition, we will start with a welcome reception on Sunday evening and finishing with a common lunch on Friday. The conference excursion, which takes you on a boat trip on the Lake Lucerne, is planned on Wednesday afternoon and the conference banquet will take place on Thursday evening, with several announcements such as the best PhD contribution price, best poster award, the announcement of the next EuroCVD conference place, and more.

We hope you will enjoy the conference and continue the spirit of EuroCVD: Traditional high quality combined with creativity and innovation.

Patrik Hoffmann
Chair of EuroCVD20

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GENERAL INFORMATION



CONFERENCE VENUE

Festhalle Seepark Sempach
Seestrasse 16
6204 Sempach
Switzerland
www.seepark-sempach.ch

DATE

July 13 – 17, 2015

CONFERENCE CHAIR

Patrik Hoffmann
Empa, Dübendorf, Switzerland

LOCAL ORGANIZING COMMITTEE

Patrik Hoffmann, Empa, Switzerland
Yury Kuzminykh, Empa, Switzerland
Sylvain Nicolay, CSEM, Switzerland
Anja Pauling, Empa Academy, Switzerland
Anne Satir, Empa Academy, Switzerland

CONGRESS OFFICE

Empa-Akademie
Anne Satir
anne.satir@empa.ch

CONFERENCE WEBSITE

<http://eurocvd20.empa.ch>

CONFERENCE LANGUAGE

The official congress language will be English

PROCEEDINGS

The papers presented at the conference will be published in “physica status solidi” in Wiley Online Library

CONFERENCE FEES

600 € (300 € for students) before May 2, 2015

650 € (350 € for students) between May 2 and
June 26, 2015

700 € (400 € for students) after June 26, 2015

GENERAL INFORMATION



SCIENTIFIC COMMITTEE

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Mato Knez, nanoGUNE, Spain

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TOPICS



- UHV-CVD, MO-MBE, HV-CVD, LP-CVD, AP-CVD, Pulsed Pressure CVD, ALD (COST action HERALD)
- Energy assistance: RF, Microwave, Plasma, Ions, Electrons, Lasers, Lamps, Reactive gases, in direct exposure or remote
- Metallurgical coatings, protective coatings, infiltration coatings, catalyst production, organic coatings
- Graphene CVD
- focused electron beam induced processing (FEBID + FEBIE) COST action CELINA
- atomic layer etching - cleaning
- Reactor modelling, numerical simulations
- In-situ characterization methods
- Precursor synthesis, property characterization, precursor supply systems, exhaust gas treatment, ecological aspects
- Other processes related to CVD, Nitridation, ...

Application fields

- Opto-electronics
- IT hardware
- Energy generation, fuel cell, storage, transformation,
- Tribological coatings
- Decorative coatings
- ...

MONDAY, JULY 13, 2015

PROGRAM



09.00 Opening Ceremony

SESSION 1: CVD for Energy

Chairman: Sergei Alexandrov

09.20 Spatial atmospheric atomic layer deposition of Zn(O,S) buffer layers for CIGS solar cells

C.H. Frijters*, A. Illiberi, F. Grob, P.J. Bolt, P. Poodt

Solliance / TNO, High Tech Campus 21, 5656 AE Eindhoven, The Netherlands

09.40 Infiltration of 3D colloidal photonic crystals with ZnO:Al by atomic layer deposition

J. Kinsella, S. O'Brien, M.E. Pemble*, and I.M. Povey

Tyndall National Institute, University College Cork, Lee Maltings, Cork, Ireland

10.00 Deposition of transparent conducting oxides by CVD

A. Catherall*, M. Hill, A. Johnson

Chemistry Department, University of Bath, Bath, BA2 7AY, UK

10.20 Coffee Break

10.50 KEY NOTE

CVD for energy applications

Michael Grätzel

EPFL, Swiss Federal Institute of Technology Lausanne

11.30 Temperature-step atomic layer deposition for morphology and crystallinity control of titanium oxide films on multiwall carbon nanotubes: Towards next generation solar cells

Carlos Guerra^{1,2*}, Yucheng Zhang¹, Meng Li², Vipin Chavala¹, Hyung Gyu Park²,

Vanessa Wood³, and Ivo Utke¹

¹Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland.

²ETH Zürich, Nanoscience for Energy Technology and Sustainability, Zürich, Switzerland

³ETH Zürich, Laboratory for Nanoelectronics, Zürich, Switzerland

11.50 Comparative analysis of ALD-In_xS_y and PEALD-In_xS_yO_z films:

Microstructures and growth mechanisms

C. Bugot^{1*}, M.Bouttemy², N.Schneider¹, A.Etcheberry², D.Lincot¹, F.Donsanti¹

¹Institut de Recherche et Développement sur l'Energie Photovoltaïque (EDF-CNRS-Chimie ParisTech – UMR 7174), 6 quai Watier, 78401 Chatou, France

²Institut Lavoisier de Versailles (CNRS-UVSQ - UMR 8180), 45 avenue des Etats-Unis, 78035 Versailles cedex, France

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PROGRAM



- 12.10 Effect of O₂ flow rate and deposition period on the thermochromic performance of VO₂ coatings grown by atmospheric pressure CVD**
D. Louloudakis^{1,2*}, D. Vernardou¹, E. Spanakis³, M. Panagopoulou⁴, G. Raptis⁴, G. Kiriakidis^{2,5}, N. Katsarakis^{1,5,6}, E. Koudoumas^{1,6}
¹Center of Materials Technology & Photonics, School of Applied Technology, Technological Educational Institute of Crete, 710 04 Heraklion, Crete, Greece
²Department of Physics, University of Crete, 711 00 Heraklion, Crete, Greece
³Department of Materials Science & Technology, University of Crete, 711 00 Heraklion, Crete, Greece
⁴School of Applied Mathematical and Physical Sciences, National Technical University of Athens, GR 157 80, Zografou Campus, Athens, Greece
⁵Institute of Electronic Structure & Laser, Foundation for Research & Technology - Hellas, P.O. Box 1527, Vassilika Vouton, 711 10 Heraklion, Crete, Greece
⁶Department of Electrical Engineering, School of Applied Technology, Technological Educational Institute of Crete, 710 04 Heraklion, Crete, Greece
- 12.30 Lunch Break**
- SESSION 2: CVD for nanomaterials production**
Chairman: Patrik Hoffmann
- 14.00 INVITED**
Scalable production of nanostructured particles using atomic layer deposition
J.R. van Ommen*
Delft University of Technology, ChemE, Julianalaan 136, 2628 BL Delft, the Netherlands
- 14.30 Plasma-assisted synthesis of iron oxide-based nanomaterials: Interplay between processing parameters and PEC performances**
M.E.A. Warwick^{1*}, K. Kaunisto^{1,2}, D. Barreca³, G. Carraro¹, E. Bontempi⁴, A. Gasparotto¹, C. Maccato¹, C. Sada⁵, T.-P. Ruoko², S. Turner⁶, G. Van Tendeloo⁶
¹Department of Chemistry, Padova University and INSTM - 35131 Padova, Italy
²Department of Chemistry and Bioengineering, Tampere University of Technology - 33101 Tampere, Finland
³CNR-IPEN and INSTM, Department of Chemistry, Padova University - 35131 Padova, Italy
⁴Chemistry for Technologies Laboratory, Brescia University - 25123 Brescia, Italy
⁵Department of Physics and Astronomy, Padova University - 35131 Padova, Italy
⁶EMAT, Antwerp University - 2020 Antwerpen, Belgium

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PROGRAM



- 14.50 Iron deposition on multi-walled carbon nanotubes by fluidized bed MOCVD for aeronautic applications**
P. Lassègue¹, L. Noé², M. Monthieux², B. Caussat^{1*}
¹LGC, ENSIACET – INP Toulouse, UMR CNRS 5503, 4 allée Emile Monso, BP 44362, 31432 Toulouse Cedex 4, France
²CEMES, UPR CNRS 8011, 29 rue Jeanne Marvig, BP 94347, 31005 Toulouse Cedex 4, France
- 15.10 Growth mechanism of tungsten oxide thin film with planar or nanorod structure deposited via aerosol-assisted CVD**
M. Ling, R. Palgrave, C. Blackman*
Department of Chemistry, University College London, 20 Gordon Street, London WC1H 0AJ, UK
- 15.30 Coffee Break**
- 16.00 CVD and analysis of thermally insulating ZrO₂ layers on injection molds**
Victoria Khlopyanova^{1*}, Simon Mausberg², Frank Mumme², Burak Atakan¹
¹Thermodynamik, IVG, Fakultät für Ingenieurwissenschaften, Universität Duisburg-Essen, Lotharstr. 1, 47048 Duisburg, Germany
²Kunststoff-Institut Lüdenscheid, Karolinenstraße, D-58507 Lüdenscheid, Germany
- 16.20 Structure-activity relation of spinel-type Co-Fe oxides for low temperature applications**
Patrick Mountapmbeme Kouotou^{1,2}, Zhen-Yu Tian^{2,4*}, Henning Vieker³
¹Higher Institute of the Sahel, University of Maroua P.O.Box: 46 Maroua, Cameroon
²Department of Chemistry, Bielefeld University, Universitätsstraße 25, D-33615 Bielefeld, Germany
³Department of Physics, Bielefeld University, Universitätsstraße 25, D-33615 Bielefeld, Germany
⁴Institute of Engineering Thermophysics, Chinese Academy of Sciences, 100190 Beijing, China
- 16.40 “Seedless” gallium oxide nanowire growth by pulsed chemical vapor deposition**
S. Barry*, P. Pallister, S. Buttera
Chemistry Department, Carleton University, 1125 Colonel, Ottawa, Ontario, K1S 2S4, Canada
- 17.00 A new class of molecular alkoxide precursors and their behaviour in gas-phase processes**
S. Barth*, F. Biegger
Institute of Materials Chemistry, Vienna University of Technology, Getreidemarkt 9, 1060 Vienna, Austria

MONDAY, JULY 13, 2015

POSTER SESSION 1



- 17.20 **POSTER SESSION 1:**
CVD mechanisms and modelling, protective coatings, powder coating, infiltration
- P1.1 Problems of hydrogen high-temperature activation when CVD**
A.K.Rebrov*, I.B. Yudin
Kutateladze Institute of Thermophysics, 1 Ave. Lavrentiev, Novosibirsk 630090, Russia
- P1.2 The computational view of vapour phase coagulation of nanoparticles synthesized by atmospheric pressure PECVD**
M.V. Mishin¹, K. Zamotin¹, A.A. Uvarov¹, V.S. Protopopova², S.E. Alexandrov¹
¹Saint Petersburg State Polytechnical University, Polytechnicheskaya st. 29, Saint Petersburg 195251, The Russian Federation
²Aalto University, Address, P.O.Box 16200, FI-00076, Aalto, Espoo, Finland
- P1.3 The computational view of the formation mechanism of clear-cut micron particles from nanoparticles synthesized by atmospheric pressure PECVD**
M.V. Mishin¹, K. Zamotin¹, I.K. Boricheva¹, V.S. Protopopova², S.E. Alexandrov¹
¹Saint Petersburg State Polytechnical University, Polytechnicheskaya st. 29, Saint Petersburg 195251, The Russian Federation
²Aalto University, Address, P.O.Box 16200, FI-00076, Aalto, Espoo, Finland
- P1.4 The automatic experimental design for modeling the reaction mechanisms of chemical vapor deposition processes**
Takahiro Takahashi*, Yoshinori Ema
Dept. of Electrical and Electronic Eng., Graduate School of Eng., Shizuoka University,
3-5-1 Johoku, Naka-ku, Hamamatsu 432-8561, Japan
- P1.5 A calculation method of deposition profiles in chemical vapor deposition reactors using bio-inspired algorithms**
Takahiro Takahashi^{1*}, Taeka Inagaki², Shingo Nariai², Junichi Kodama², Masamoto Arakawa³, Yoshinori Ema¹
¹Dept. of Electrical and Electronic Eng., Graduate School of Eng., Shizuoka University,
3-5-1 Johoku, Naka-ku, Hamamatsu 432-8561, Japan
²Dept. of Electrical and Electronic Eng., Faculty of Eng., Shizuoka University,
3-5-1 Johoku, Naka-ku, Hamamatsu 432-8561, Japan
³Dept. of Business Administration, Ube National College of Technology,
2-14-1 Tokiwadai, Ube 755-8555, Japan

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POSTER SESSION 1



P1.6 Multi-scale analysis of chemical vapor deposition for SiC from organosilane precursors

Hidetoshi Sugiura^{1*}, Noboru Sato¹, Yuichi Funato¹, Kohei Shima¹, Yasuyuki Fukushima², Takeshi Momose¹, and Yukihiro Shimogaki¹

¹Department of Materials Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan

²Advanced Applied Science Department Research Laboratory, IHI Corporation, 1, Shin-Nakahara-Cho, Isogo-ku, Yokohama 235-8501, Japan

P1.7 Construction of overall reaction model of silicon carbide chemical vapor infiltration for process design

Yuichi Funato^{1*}, Noboru Sato¹, Kohei Shima¹, Hidetoshi Sugiura¹, Yasuyuki Fukushima², Takeshi Momose¹, and Yukihiro Shimogaki¹

¹Department of Materials Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan

²Advanced Applied Science Department Research Laboratory, IHI Corporation, 1, Shin-Nakahara-Cho, Isogo-ku, Yokohama 235-8501, Japan

P1.8 Kinetic study on chemical vapor infiltration of silicon carbide using high-aspect-ratio features

Kohei Shima^{1*}, Noboru Sato¹, Yuichi Funato¹, Hidetoshi Sugiura¹, Yasuyuki Fukushima², Takeshi Momose¹, and Yukihiro Shimogaki¹

¹Department of Materials Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan

²Advanced Applied Science Department Research Laboratory, IHI Corporation, 1, Shin-Nakahara-Cho, Isogo-ku, Yokohama 235-8501, Japan

P1.9 Reactivity of silicon nitride surface sites with silicon chloride precursors during atomic layer deposition

Luchana L. Yusup¹, Jae-Min Park¹, Sora Park², Young-Kyun Kwon^{2*}, and Won-Jun Lee^{1*}

¹Department of Nanotechnology and Advanced Materials Engineering, Sejong University, Seoul, 143-747, Korea

²Department of Physics, Research Institute for Basic Sciences, Kyung Hee University, Seoul 130-701, Korea

P1.10 Image transfer simulation in slot structures in MOCVD processes

I. Golovnev¹, E. Golovneva¹, B. Kuchumov^{2*}, Y. Shevtsov², I. Igumenov²

¹Khrstianovich Institute of Theoretical and Applied Mechanics SB RAS, Institutskaya str. 4/1, Novosibirsk, 630090, Russian Federation

²Nikolaev Institute of Inorganic Chemistry, SB RAS, Lavrentiev ave. 3, Novosibirsk, 630090, Russian Federation

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POSTER SESSION 1



- P1.11 Protective Al₂O₃ thin film coatings for beryllium optics: structural and adhesion features under white beam synchrotron irradiation**
O. Yurkevich^{1*}, K.Maksimova¹, A.Goikhman¹, I. Snigireva², A. Snigirev²
¹Immanuel Kant Baltic Federal University, Nevskogo st.14, Kaliningrad, 236041 Russia
²European Synchrotron Radiation Facility (ESRF), 71 avenue des Martyrs, 38000 Grenoble, France
- P1.13 Synthesis and characterization of titanium aluminium nitride thin films deposited by reactive-CVD**
H. Shimoda^{1,2,3}, F. Mercier^{1,2*}, S. Lay^{1,2}, E. Blanquet^{1,2}
¹Univ. Grenoble Alpes, SIMAP, F- 38000 Grenoble, France
²CNRS, SIMAP, F-38000 Grenoble, France
³Tohoku Univ., 41 Kawauchi, Aoba-ku, Sendai 980-8576, Japan
- P1.14 Highly tunable metaloxidic CVD coatings of alumina nanoparticles in a fluidized bed reactor**
L. Pasin^{1*}, M. Vranceanu², M. Seipenbusch¹, M. Schäfer², B. Sachweh², G. Kasper¹
¹Institute of Mechanical Process Engineering and Mechanics Karlsruhe, Institute of Technology, Straße am Forum 8, Karlsruhe 76131, Germany
²Joint Lab IP3, BASF SE, Ludwigshafen 67056, Germany
- P1.15 Kinetic and phase stability of stabilized zirconia coating doped with yttria by chemical vapor deposition**
Yonglong Xu, Wei Sun^{*}, Xiang Xiong
State Key Laboratory of Powder Metallurgy, Central South University, Changsha, 410083, China
- P1.16 Adhesion and hardness characteristics of SiCN/Si(100) prepared by HWCVD**
T. Yamamoto¹, T. Iseda, T. Yamada^{1,2}, Y. Kadatani³, A. Izumi^{1,3*}
¹Kyushu Institute of Technology, 1-1 Sensui, Tobata, Fukuoka 804-8550, Japan
²Fukuyama Polytechic Colleege, 4-8-48 Kitahonjo, Fukuyama, Hiroshima 720-0074, Japan
³Top Maccoat Co., Ltd., 631-1 Mizuki, Dazaifu, Fukuoka 818-0131, Japan
- P1.17 Study of precursor chemistry and solvent systems in pp-MOCVD processing with alumina case study**
S. Krumdieck^{1*}, Y. Kehyati¹, H. Murthy¹, S. L. Masters², N. R. Gunby², S. Miya¹
¹Department of Mechanical Engineering, Private Bag 4800, University of Canterbury, Christchurch, 8041, New Zealand
²Department of Chemistry, Private Bag 4800, University of Canterbury, Christchurch, 8041, New Zealand

MONDAY, JULY 13, 2015

POSTER SESSION 1



- P1.18 Synthesis of carbon nanotubes by fluidized-bed with synthesis gases**
M. Gürsoy^{1*}, O.M. Dogan², B.Z. Uysal²
¹Selcuk University, Department of Chemical Engineering, Konya and 42075, Turkey
²Gazi University, Eti Mh. Yükselis Sk. No: 5, Maltepe, Ankara and 06500, Turkey
- P1.19 Mass-spectrometric and kinetic study of NiO films MOCVD from bis-(ethylcyclopentadienyl) Nickel**
A.S. Kondrateva*, S.E. Alexandrov
Saint Petersburg State Polytechnic University, Department of Physical Chemistry and Technology of Microsystem Devices, Polytechnicheskaya st. 29, St. Petersburg 195251, Russia
- P1.20 How to supply a CVD reactor with a steady-state mixture of two precursors evaporated from a single heated boat**
G. Peev*, D. Peshev
University of Chemical Technology and Metallurgy, "Kl. Ohridski" 8, Sofia-1756, Bulgaria
- P1.21 Evolution of microstructure in titanium dioxide layers**
M. Baryshnikova*, L. Filatov, S. Alexandrov
Department of Physical Chemistry and Technology of Microsystem Devices, St. Petersburg Polytechnical University, 29 Polytechnicheskaya st., St. Petersburg, 195251, Russia
- P1.22 Formation of hydroxyapatite on CVD deposited titania layers**
M. Baryshnikova^{1*}, L. Filatov¹, I. Kasatkin², S. Alexandrov¹
¹Department of Physical Chemistry and Technology of Microsystem Devices, St. Petersburg Polytechnical University, 29 Polytechnicheskaya st., St. Petersburg, 195251, Russia
²Research Centre for X-ray Diffraction Studies, St. Petersburg State Polytechnical University, 16 Decabristov lane, St. Petersburg, 199155, Russia
- P1.23 Numerical evaluation of silicon epitaxial growth for 450mm Ø substrate**
Misako Matsui and *Hitoshi Habuka
Yokohama National University, Tokiwadai, Hodogaya, Yokohama 240-8501, Japan
- P1.24 Morphology of Germanium nanostructures prepared by LPCVD on unseeded stainless steel substrate**
L. Krabac^{1,2*}, R. Fajgar¹, J. Brenner², N. Doerr², R. Medlin³, V. Drinek¹
¹Institute of Chemical Process Fundamentals of the ASCR, v. v. i., Rozvojova 135, 165 02 Prague, Czech Republic
²AC2T research GmbH, Viktor Kaplan Straße 2, 2700 Wiener Neustadt, Austria
³University of West Bohemia, New Technologies - Research centre, Univerzitni 8, 06 14 Plzen, Czech Republic

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POSTER SESSION 1



P1.25 The effect of non-ionic surfactant addition in the production of titanium dioxide thin films via aerosol-assisted chemical vapour deposition

A-L. Anderson*, R. Binions

School of Engineering and Materials Science, Queen Mary University of London,
Mile End Road, London, UK

P1.27 CVD of boron nitride on silicon carbide substrates

Mikhail Chubarov¹, Henrik Pedersen¹, Zsolt Czigány², Hans Högberg¹, Anne Henry^{1*}

¹Department of Physics, Chemistry and Biology, Linköping University, SE-581 83, Linköping, Sweden

²Research Centre for Natural Sciences of Hungarian Academy of Sciences,
Konkoly Thege Miklós út 29-33, H-1121, Budapest, Hungary

P1.28 Investigation of the kinetics of the chemical vapor deposition of aluminum from dimethylethylamine alane: experiments and computations

Ioannis G. Aviziotis^{1,2}, Thomas Duguet², Khaled Soussi³, George Kokkoris^{4,1}, Nikolaos Cheimarios⁵,
Constantin Vahlas², Andreas G. Boudouvis¹

¹School of Chemical Engineering, National Technical University of Athens, Heroon Polytechniou 9,
15780 Zografou, Greece

²CIRIMAT, CNRS - Université de Toulouse, 4 allée Emile Monso BP44362,
31030 Toulouse cedex 4, France

³IRCELYON-CNRS-Université Lyon1, 2 avenue Albert Einstein, 69626 Villeurbanne cedex, France

⁴Institute of Nanoscience and Nanotechnology, NSRF Demokritos, Athens 15310, Greece

⁵Scienomics SARL, 16 rue de l'Arcade, 75008 Paris, France

TUESDAY, JULY 14, 2015

PROGRAM



SESSION 3: CVD of graphene, CNT, and related materials

Chairman: Naoufal Bahlawane

09.00 INVITED

Evolution of Mono- and Bilayer Graphene in Chemical Vapor Deposition

Hyung Gyu Park

Nanoscience for Energy Technology and Sustainability, Department of Mechanical and Process Engineering (D-MAVT), ETH Zürich, 8092 Zürich, Switzerland

09.30 CVD synthesis, characterization and application of 3-dimensional graphene

V. Shanov^{1,2*}, L. Zhang², N. Alvarez¹, M. Zhang², M. Haase¹, R. Malik², D. Mast³

¹Department of Biomedical, Chemical and Environmental Engineering, University of Cincinnati, Cincinnati, OH 45221, USA

²Department of Mechanical and Materials Engineering, University of Cincinnati, OH 45221, Cincinnati, OH 45221, USA

³Department of Physics, University of Cincinnati, OH 45221, Cincinnati, OH 45221, USA

09.50 From planar to fluidized bed reactors:

ALD-CVD for the controlled growth of carbon nanotubes

D. Arl*, M. Sarr, N. Adjeroud, N. Bahlawane, D. Lenoble

Luxembourg Institute of Science and Technology (LIST), 5, avenue des Hauts-Fourneaux, L-4362 Esch/Alzette, Luxembourg

10.10 Coffee Break

10.40 Development of ultra-thin diamond like carbon overcoat for the hard disk drive applications

B. Tomčik^{1*}, B. Marinković¹, B. Predojević²

¹Institute of Physics, University of Belgrade, 11080 Belgrade, Serbia

²Faculty of Natural Sciences, University of Banja Luka, Republic of Srpska, Banja Luka, Bosnia and Herzegovina

11.00 CVD diamond deposition on carbon fiber composites

R. Haubner*, M. Lessiak

¹University of Technology Vienna, Institute of Chemical Technologies and Analytics, Getreidemark 9/164-CT, A-1060 Vienna, Austria

TUESDAY, JULY 14, 2015

PROGRAM



- 11.20 Diamond structures deposition from interacting jets**
A.K.Rebrov^{1*}, A.A. Emelyanov¹, S.S. Kosolobov², I.B. Yudin¹
¹Kutateladze Institute of Thermophysics, Pr. Lavrentieva 1, Novosibirsk 630090, Russia
²Rzhanov Institute of Semiconductor Physics, Pr. Lavrentieva 13, Novosibirsk 630090, Russia
- 11.40 Densification and hydration of HMDSO plasma polymer films**
N. Blanchard^{1*}, M. Heuberger^{1,2}, D. Hegemann¹
¹Empa, Swiss Federal Laboratories for Materials Science and Technology, Lerchenfeldstr. 5, 9014 St. Gallen, Switzerland
²ETH Zürich, Laboratory for Surface Science, Vladimir-Prelog-Weg 5, 8093 Zürich, Switzerland
- 12.00 Deposition of thin composited films from fluoropolymer and silver nanoparticles having surface plasmon resonance**
A.I. Safonov^{1*}, V.S. Sulyaeva², N.I. Timoshenko¹, S.V. Starinskiy¹
¹Kutateladze Institute of Thermophysics SB RAS, Ave. Lavrentyev, 1, Novosibirsk, 630090, Russia
²Nikolaev Institute of Inorganic Chemistry SB RAS, Ave. Lavrentyev, 3, Novosibirsk, 630090, Russia
- 12.20 Lunch Break**
- 13.50 Synthesis, characterization and kinetic analysis of polymeric nano-coatings deposited by initiated plasma enhanced chemical vapor deposition**
M. Karaman^{1,2*}, M. Gürsoy¹, T. Uçar¹, E. Demir¹, E. Sevgili¹
¹Selcuk University, Department of Chemical Engineering, Konya and 42075, Turkey
²Selcuk University, Adv. Research & Application Center, Konya and 42075, Turkey
- 14.10 Immobilisation of human serum albumin onto PVA/P(HEMA-co-GMA) thin film hydrogel membranes prepared by initiated chemical vapor deposition**
Fatma Sariipek^{1,2*}, Esra Maltas³, Mustafa Karaman^{1,2}
¹Department of Chemical Engineering, Selcuk University, Konya 42031, Turkey
²Advanced Technology Research & Application Center, Selcuk University Konya 42075, Turkey
³Department of Chemistry, Selcuk University, Konya 42130, Turkey
- SESSION 3: CVD modeling**
Chairman: Constantin Vahlas
- 14.30 INVITED**
Multiscale analysis of CVD processes: modeling, computations, experiments
Andreas G. Boudouvis
School of Chemical Engineering, National Technical University of Athens, Athens, Greece

TUESDAY, JULY 14, 2015

PROGRAM



- 15.00 **Time-scale analysis for atomic layer deposition kinetics modeling**
E. Remmers, R.A. Adomaitis*
Chemical and Biomolecular Engineering, University of Maryland, College Park,
MD 20742, USA
- 15.20 **Coffee Break**
- 15.50 **Detailed 3D CFD modeling of a horizontal hot-wall CVD reactor**
P. Randell, Ö. Danielsson*
Department of Physics, Chemistry and Biology, Linköping University,
SE – 581 83 Linköping, Sweden
- 16.10 **A simplified reaction model and numerical analysis for Si deposition from SiHCl₃ in vertical rotating disk reactors**
S. Makino*, M. Inagaki, K. Nakashima, T. Kozawa, N. Horinouchi
Toyota Central R&D Labs. Inc., 41-1 Yokomichi, Nagakute, Aichi, 480-1192, Japan
- 16.30 **Gas phase and surface reaction simulation on chemical vapor infiltration of silicon carbide**
Noboru Sato¹, Yuichi Funato¹, Kohei Shima¹, Yasuyuki Fukushima², Takeshi Momose¹,
Mitsuo Koshi¹, Yukihiro Shimogaki¹
¹School of Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan
²Advanced Applied Science Department Research Laboratory, IHI Corporation, 1,
Shin-Nakahara-Cho, Isogo-ku, Yokohama 235-8501, Japan
- 16.50 **Process-structure-properties relationship in direct liquid injection chemical vapor deposition of amorphous alumina from aluminum tri-isopropoxide**
P.-L. Etchepare^{1*}, L. Baggetto¹, H. Vergnes², D. Samélor¹, D. Sadowski¹, B. Caussat², C. Vahlas¹
¹Centre Interuniversitaire de Recherche et d'Ingénierie des Matériaux, ENSIACET/INPT,
Université de Toulouse, France
²Laboratoire de Génie Chimique, ENSIACET/INPT, Université de Toulouse, France
- 17.10 **In-situ observation of chemical vapor deposition using SiHCl₃ and BCl₃ Gases**
Ayumi Saito, Kento Miyazaki, Misako Matsui, and *Hitoshi Habuka
Yokohama National University, Tokiwadai, Hodogaya, Yokohama 240-8501, Japan

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POSTER SESSION 2



- 17.30 **POSTER SESSION 2:**
Electronic applications; epitaxy; in-situ observation
- P2.1 **Epitaxy of high mobility strained Ge quantum well heterostructures**
Maksym Myronov
The University of Warwick, Gibbet Hill Road, Coventry CV4 7AL, UK
- P2.3 **Aluminium nitride as a capping layer for rare-earth nitride thin films**
S. Cwik¹*, M. Krasnopolski¹, Stefanie Hoffmann¹, Alexander Sadlo¹, Kevin Schiemann¹, Detlef Rogalla², A. Devi¹
¹Inorganic Materials Chemistry, Ruhr-University Bochum, 44801 Bochum, Germany
²Dynamitron-Tandem-Laboratory (DTL) of RUBION, Ruhr-University Bochum, 44801 Bochum, Germany
- P2.4 **Study of organic-polymerized thin films for low-k insulator using PECVD**
Hyeon Jin Seo¹, Ki-Hwan Hwang², Jee Yun Lee², Yong Min Lee¹, Sang Hun Nam², Jin-Hyo Boo^{1*}
¹Department of Chemistry, Sungkyunkwan University 440-746 Suwon, Republic of Korea
²Institute of Basic Science, Sungkyunkwan University 440-746 Suwon, Republic of Korea
- P2.5 **Electrical characteristics of TiO₂-capped HfO₂ film on n-type InP**
S. Choi, C. Lee, Y. An, C.-W. Yang, H. Kim*
School of Advanced Materials Science & Engineering, Sungkyunkwan University, Suwon, 440-746, Korea
- P2.6 **Self-cleaning effect of half-cycle diethylzinc treatment on the electrical properties of HfO₂/In_{0.53}Ga_{0.47}As**
C. Lee, Y. An, S. Choi, H. Kim*
School of Advanced Materials Science and Engineering, Sungkyunkwan University, Suwon 440-746, Korea
- P2.7 **A simple MOCVD approach to the growth of Pr_{1-x}Ca_xMnO₃ films on single crystal SrTiO₃ substrates**
Maria R. Catalano^{1*}, Giuseppe Cucinotta², Emanuela Schilirò³, Matteo Mannini², Andrea Caneschi², Raffaella Lo Nigro³, Guglielmo G. Condorelli¹, Graziella Malandrino¹
¹Dipartimento di Scienze Chimiche, Università degli Studi di Catania, and INSTM UdR di Catania, Catania, 95125, Italy
²Dipartimento di Chimica "Ugo Schiff", Università degli Studi di Firenze, INSTM UdR di Firenze, Via della Lastruccia 3, Sesto Fiorentino, (FI) 50019, Italy
³Istituto per la Microelettronica e Microsistemi, IMM-CNR, Strada VIII n. 5, 95121 Catania, Italy

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- P2.8 Combinatorial high vacuum CVD of Barium tri-isopropyl cyclopentadienyl and Titanium tetra isopropoxide**
M. Reinke, Y. Kuzminykh*, P. Hoffmann
Laboratory for Advanced Materials Processing, Empa, Swiss Federal Laboratories for Materials Science and Technology, Feuerwerkerstr. 39, 3602 Thun, Switzerland and Laboratory for Photonic Materials and Characterization, Ecole Polytechnique Fédérale de Lausanne, Station 17, 1015 Lausanne, Switzerland
- P2.9 Metal-organic chemical vapour deposition and atomic layer deposition of ZnO using zinc ketoiminates**
R.O'Donoghue¹, D. Peeters¹, K. Schiemann¹, D. Rogalla², H. Parala¹, A. Devi¹
¹Inorganic Materials Chemistry, Ruhr-University Bochum, 44801, Bochum, Germany
²Dynamitron-Tandem-Laboratory (DTL) of RUBION, Ruhr-University Bochum, 44801 Bochum, Germany
- P2.10 Intermolecular interaction between rare earth and manganese precursors in metalorganic chemical vapor deposition of perovskite manganite films**
Toshihiro Nakamura
Department of Engineering Science, Osaka Electro-Communication University, 18-8 Hatsu-cho, Neyagawa, Osaka 572-8530, Japan
- P2.11 Effect of noble gases and hydrogen addition to nitrogen in ICP RPECVD of silicon nitride**
L. Filatov*, A. Uvarov, K. Tyurikov, S. Alexandrov
Department of Physical Chemistry and Technology of Microsystem Devices, St. Petersburg Polytechnical University, 29 Polytechnicheskaya str., St. Petersburg, 195251, Russia
- P2.12 Low pressure chemical vapor deposition of graphene on copper substrates using different alcohols as carbon sources**
E. Citak*, M. Gürsoy, M. Karaman
Selcuk University, Department of Chemical Engineering, Konya and 42075, Turkey
- P2.13 Secondary electron emission characteristics of multicomponent structures based on magnesia thin films**
S.V. Zabuslayev*, Yu.V. Shevtsov, B.M. Kuchumov, Yu.V. Shubin, I.K. Igumenov
Nicolaev Institute of Inorganic Chemistry, SB RAS, Lavrentiev Ave. 3, 630090 Novosibirsk, Russia

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- P2.14 Atomic layer deposition of silicon nitride thin films using octachlorotrisilane**
Jae-Min Park¹, Han-Gyeol Lee¹, Luchana L. Yusup¹, Byeol Han¹, Wongyong Koh², Won-Jun Lee^{1*}
¹Department of Nanotechnology and Advanced Material Engineering, Sejong University, Seoul, 143-747, Korea
²UP chemical Co. Ltd., Gyeonggido, 459-050, Korea
- P2.15 Effect of AlN buffer layer on GaN crystallinity on patterned sapphire substrate**
W.S. Jeong¹, B.H. Kang¹, C.M. Lee¹, D.-S. Kim¹, S.J. Jung¹, S. Bae¹, J. Lee¹, J. Jhin², D. Byun^{1*}
¹Materials Science & Engineering, Korea University, Anam-dong 5-1, Seongbuk-gu, Seoul, 136-713, Republic of Korea
²Department of Chip Development, LG Innotek, 1493 Naepo-ri, Moonsan-eup, Paju-si, Gyeonggi-do, 413-901, Republic of Korea
- P2.16 Structural evolution and control of defect in ultrathin nitride film grown on 4H-SiC(0001) surface by direct N plasma**
Dae-Kyoung Kim, Yu-Seon Kang, and Mann-Ho Cho*
Institute of Physics and Applied Physics, Yonsei University, Seoul 120-749, Korea
- P2.17 MOCVD of TiO₂ thin films from modified Titanium alkoxides**
S.J. Kim^{1*}, V.S. Dang¹, D. Barreca², C. Maccato³, R.K. Bhakta¹, K. Xu¹, M. Winter¹, D. Rogalla⁴, H.W. Becker⁴, C. Sada⁵, R.A. Fischer¹, A. Devi¹
¹Inorganic Materials Chemistry, Ruhr University Bochum - 44801 Bochum, Germany
²CNR-IPEN and INSTM, Department of Chemistry, Padova University - 35131 Padova, Italy
³Department of Chemistry, Padova University and INSTM - 35131 Padova, Italy
⁴Dynamitron Tandem Laboratory of RUBION, Ruhr University Bochum - 44801 Bochum, Germany
⁵Department of Physics and Astronomy, Padova University - 35131 Padova, Italy
- P2.18 Investigation of structural and morphological properties of APCVD vanadium oxide thin films**
G. Papadimitropoulos^{1*}, I. Kostis^{1,2}, S. Trantallidis¹, M. Vasilopoulou¹, D. Davazoglou¹
¹NCSR Demokritos, Institute of Nanoscience and Nanotechnology, Terma Patriarchou Grigoriou Aghia Paraskevi, 15310, Greece
²Technological and Educational Institute of Pireaus, Department of Electronics, 12244, Aegaleo, Greece

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P2.19 Hot-wire vapor deposition of MoS₂ thin films

G. Papadimitropoulos^{1*}, N. Vourdas¹, M. Vasilopoulou¹, D.N. Kouvatsos¹, D. Barreca²,
A. Gasparotto³, D. Davazoglou¹

¹NCSR Demokritos, Institute of Nanoscience and Nanotechnology, Terma Patriarchou
Grigoriou Aghia Paraskevi, 15310, Greece

²CNR-IENI and INSTM, Department of Chemistry, Padova University, 35131 Padova, Italy

³Department of Chemistry, Padova University and INSTM, 35131 Padova, Italy

**P2.20 Electrical characteristics of two-terminal vapor deposited MoS₂ structures
with Al, Au, Cu and Ni-Au contacts**

D.N. Kouvatsos¹, G. Papadimitropoulos^{1*}, Th. Spiliotis¹, M. Vasilopoulou¹, D. Barreca²,
A. Gasparotto³, D. Davazoglou¹

¹NCSR Demokritos, Institute of Nanoscience and Nanotechnology, Terma Patriarchou
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³Department of Chemistry, Padova University and INSTM, 35131 Padova, Italy

**P2.21 Electrochromic redox devices based on APCVD pre-lithiated WO₃ thin films and comparison
with reference wet sprayed and sol-gel derived WO₃ prototypes**

G. Bodurov^{1*}, T. Ivanova¹, Y.E. Romanyuk², K. Gesheva¹

¹Central Laboratory of Solar Energy and New Energy Sources at the Bulgarian Academy of
Sciences, 72 Tzarigradsko chaussee Blvd., 1784 Sofia, Bulgaria

²Laboratory for Thin Films and Photovoltaics at Empa, Ueberlandstrasse 129,
CH-8600 Dübendorf, Switzerland

P2.22 PECVD synthesis of SiCN films from phenyl-containing precursor

E. Ermakova^{1*}, M. Kosinova¹, Y. Romyantsev¹, K. Mogilnikov², S. Sysoev¹

¹Nikolaev Institute of Inorganic Chemistry SB RAS, Novosibirsk, 630090, Russia

²Rzhanov Institute of Semiconductor Physics SB RAS, 630090, Novosibirsk, Russia

**P2.23 Effects of surface treatments on AlGaN/GaN substrates for plasma Enhanced Atomic Layer
deposition of Al₂O₃ gate dielectric thin films**

E. Schilirò^{1,2*}, G. Greco¹, P. Fiorenza¹, C. Tudisco², G.G. Condorelli², G. Malandrino²,
F. Roccaforte¹, R. Lo Nigro¹

¹Istituto per la Microelettronica e Microsistemi (IMM)- Consiglio Nazionale delle Ricerche,
Strada VIII 5, Catania 95121, Italy

²Dipartimento di Scienze Chimiche, Università di Catania, Viale Andrea Doria 6, Catania 95125, Italy

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- P2.24 Silicon oxide thin films prepared with high rates at room temperature using atmospheric-pressure very high-frequency plasma**
T. Sakaguchi*, S. Tamaki, W. Lin, T. Yamada, H. Ohmi, H. Kakiuchi, K. Yasutake
Department of Precision Science and Technology, Graduate School of Engineering,
Osaka University, 2-1 Yamada-Oka, Suita, Osaka 565-0871, Japan
- P2.25 Investigation on the deposition characteristics of silicon and silicon oxide thin films in atmospheric-pressure very high-frequency plasma for their application to thin film transistors**
H. Kakiuchi*, H. Ohmi, T. Yamada, W. Lin, T. Sakaguchi, S. Tamaki, K. Yasutake
Department of Precision Science and Technology, Graduate School of Engineering,
Osaka University, 2-1 Yamada-Oka, Suita, Osaka 565-0871, Japan
- P2.26 Growth of β -gallium oxide films and nanostructures by atmospheric-pressure CVD**
T. Terasako¹, H. Ichinotani², M. Yagi³
¹Graduate School of Science & Engineering, Ehime University, 3 Bunkyo-cho, Matsuyama,
Ehime 790-8577, Japan
²Faculty of Engineering, Ehime University, 3 Bunkyo-cho, Matsuyama, Ehime 790-8577, Japan
³National Institute of Technology, Kagawa College, 551 Koda, Takuma-cho, Mitoyo,
Kagawa, 769-1192, Japan
- P2.27 Polytype of sp^2 -BN thin films as dictated by the substrate crystal structure**
Mikhail Chubarov¹, Henrik Pedersen¹, Zsolt Czigány², Magnus Garbrecht¹, Hans Högberg¹, Anne Henry^{1*}
¹Department of Physics, Chemistry and Biology, Linköping University, SE-581 83, Linköping, Sweden
²Research Centre for Natural Sciences of Hungarian Academy of Sciences,
Konkoly Thege Miklós út 29-33, H-1121, Budapest, Hungary

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PROGRAM



SESSION 4: in-situ observation – CVD process development

Chairman: Andreas G. Boudouvis

09.00 INVITED

A Ge/Si core/shell nanowire with controlled low temperature grown Si shell thickness

T. Noguchi^{1*}, M.D.K. Simanullang¹, Z. Xu¹, K. Usami¹, Y. Kawano^{1,2}, T. Kodera², S. Oda^{1,2}

¹Quantum Nanoelectronics Research Center, Tokyo Institute of Technology, 2-12-1, O-okayama, Meguro-ku, Tokyo, Japan

²Department of Physical Electronics, Tokyo Institute of Technology, 2-12-1, O-okayama, Meguro-ku, Tokyo, Japan

09.30 Low pressure metal organic chemical vapor deposition of amorphous alumina thin films using DMAI precursor in a direct liquid injection system

Loïc Baggetto^{1*}, Hugues Vergnes², Diane Samelor¹, Alain Gleizes¹, Brigitte Caussat², Constantin Vahlas¹

¹Centre Inter-universitaire de Recherche et d'Ingénierie des Matériaux (CIRIMAT), UMR5085, CNRS, 4 allée Emile Monso, 31030 Toulouse Cedex 4, France

²Laboratoire de Génie Chimique (LGC), ENSIACET/INPT, 4 allée Emile Monso, 31030 Toulouse Cedex 4, France

09.50 Durable high performance antireflection coatings via combinational atmospheric pressure processing

J.L. Hodgkinson^{1*}, P.E. Sheel², P. Evans², H.M. Yates¹, D.W. Sheel^{1,2}

¹Materials & Physics Research Centre, University of Salford, Salford, M5 4WT, UK

²CVD Technologies Ltd, Cockcroft Building, University of Salford, M5 4WT, UK

10.10 Coffee Break

10.40 Low temperature chemical vapor deposition using atomic layer deposition chemistry

M. Reinke*, Y. Kuzminykh, P. Hoffmann

Laboratory for Advanced Materials Processing, Empa, Swiss Federal Laboratories for

Materials Science and Technology, Feuerwerkerstrasse 39, CH-3602 Thun, Switzerland

Laboratory for Photonic Materials and Characterization, Ecole Polytechnique Fédérale de

Lausanne, Station 17, CH-1015 Lausanne, Switzerland

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- 11.00 Electric field assisted atmospheric pressure chemical vapour deposition of functional metal oxide thin films**
L. Romero¹, M.E.A. Warwick², R. Binions^{1*}
¹School of Engineering and Materials Science, Queen Mary University of London, Mile End Road, London, UK
²Department of Chemistry, University of Padova, Via Marzolo 1, 35131 Padova, Italy
- 11.20 Deposition of TiO₂ microflowers by aerosol assisted MOCVD**
S. Biswas^{1,2}, C. Jiménez², J.L. Deschanvres², A.K. Kar¹, D. Muñoz-Rojas^{2*}
¹Indian School of Mines, Dhanbad-826004, Jharkhand, India
²Univ. Grenoble Alpes, LMGP, F-38000 Grenoble, France CNRS, LMGP, F-38000 Grenoble, France
- 11.40 Novel yttrium ketoiminate complexes as potential precursors for atomic vapor deposition of Y₂O₃ thin films**
S. Cwik^{1*}, K. Xu¹, D. Rogalla², T. de los Arcos³, A. Devi¹
¹Inorganic Materials Chemistry, Ruhr-University Bochum, 44801 Bochum, Germany
²Dynamitron-Tandem-Laboratory (DTL) of RUBION, Ruhr-University Bochum, 44801 Bochum, Germany
³Experimental Physics II, Ruhr-University Bochum, 44801 Bochum, Germany
- 12.00 In-situ FTIR analysis on the atomic layer deposition of metal oxide films**
Tirta R. Mayangsari, Jae-Min Park, Won-Jun Lee*
Department of Nanotechnology and Advanced Material Engineering, Sejong University, Seoul, 143-747, Korea
- 12.20 Lunch Break**

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POSTER SESSION 3



- 13.50 **POSTER SESSION 3:**
Catalysis and photo-catalysis, sensors and detectors, functional coatings
- P3.1 Metal nanoparticle modified ceria thin films deposited via aerosol assisted chemical vapour deposition**
M. Evans, F. Di Maggio, C. Blackman*, G. Sankar
¹Department of Chemistry, University College London, 20 Gordon Street, London, WC1H 0AJ, UK
- P3.2 Aerosol Assisted Chemical Vapour Deposition of Zinc Oxide and Zinc Cyanamide**
K. Kaye, G. Hyett*
¹University of Southampton, Highfield, Southampton, SO17 1BJ, UK
- P3.3 Tuning the oxygen fluorescence response in gas and liquids of ZnO prepared by PECVD**
J.R. Sanchez-Valencia, M. Alcaire, P. Romero-Gomez, M. Macias-Montero, F.J. Aparicio, A. Borras, A. Barranco, A.R. Gonzalez-Elipe*
¹Instituto de Ciencia de Materiales de Sevilla (CSIC-Univ. Sevilla). c/Américo Vespucio 49. 41092 Sevilla, Spain
- P3.4 Synthesis of vanadium dioxide thin films with controlled morphologies**
S. Kumar¹, D.Lenoble¹, F. Maury², N. Bahlawane¹
¹Luxembourg Institute of Science and Technology (LIST), 5, avenue des Hauts-Fourneaux, L-4362 Esch/Alzette, Luxembourg
²CIRIMAT, ENSIACET - 4 allée E. Monso, Toulouse – 31432, France
- P3.5 AACVD and ALD of vanadium pentoxide thin films for electrochromic applications**
I.I. Kazadojev, S. O'Brien, M.E. Pemble and I.M. Povey*
Tyndall National Institute, University College Cork, Lee Maltings, Cork, Ireland
- P3.6 Remote plasma assisted vacuum deposition of organic nanocomposite multifunctional thin films**
M. Alcaire, F.J. Aparicio, A. Borras, A.R. González-Elipe, A. Barranco*
Consejo Superior de Investigaciones Científicas. Instituto de Ciencia de Materiales de Sevilla (CSIC-Universidad de Sevilla). c/Américo Vespucio 49, 41092 Sevilla, Spain
- P3.7 Atomic layer deposition of germanium antimony alloys for Ge-Sb-Te compounds**
Yu-Jin Kim¹, Byeol Han¹, Jae-Min Park¹, Wongyong Koh², Won-Jun Lee^{1*}
¹Department of Nanotechnology and Advanced Material Engineering, Sejong University, Seoul, 143-747, Korea
²UP chemical Co. Ltd., Gyeonggido, 459-050, Korea

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POSTER SESSION 3



- P3.8 Synthesis of Cu_2O by CVD for deep oxidation of VOCs**
Guan-fu Pan, Jing Liang, Shi-Bin Fan, Yue-Xi Liu, Zhen-Yu Tian*
Institute of Engineering Thermophysics, Chinese Academy of Sciences, China
- P3.9 Preparation and catalytic combustion application of chromium oxide film**
Jing Liang^{1,2}, Guan-fu Pan¹, Shi-Bin Fan¹, Wei-Liang Cheng², Zhen-Yu Tian^{1*}
¹Institute of Engineering Thermophysics, Chinese Academy of Sciences, 100190 Beijing, China
²School of Energy, Power and Mechanical Engineering, North China Electric Power University, Beijing 102206, China
- P3.10 Tailored synthesis of Cu_2O thin films with PSE-CVD for CO oxidation**
Achraf El Kasmi^{1,2}, Mhamed Assebban¹, Henning Vieker³, André Beyer³, Tarik Chafik¹, Zhen-Yu Tian^{2,4*}
¹Laboratory LMVR, Faculty of Sciences and Techniques, University Abdelmalek Essaadi, B.P. 416 Tangier, Morocco
²Department of Chemistry, Bielefeld University, Universitätsstraße 25, D-33615 Bielefeld, Germany
³Department of Physics, Bielefeld University, Universitätsstraße 25, D-33615 Bielefeld, Germany
⁴Institute of Engineering Thermophysics, Chinese Academy of Sciences, 100190 Beijing, China
- P3.11 Effect of substrate temperature on initiated plasma enhanced chemical vapor deposition of PHEMA thin films**
M. Gürsoy*, T. Uçar, M. Karaman
¹Selcuk University, Department of Chemical Engineering, Konya and 42075, Turkey
- P3.12 Organic-inorganic nano laminate thin films obtaining lag time effect for encapsulation layer**
Kwan Hyuck Yoon, Jin Won Jung, Myung Mo Sung*
Chemistry, Hanyang University, 222 Wangsimni-ro, Seongdong-gu, Seoul 133-791, South Korea
- P3.13 Atmospheric pressure chemical vapor deposition of Ti-doped ZnO films**
C.H. Frijters*, F.T.J. Grob, P.J. Bolt, A. Illiberi
Solliance / TNO, High Tech Campus 21, 5656 AE Eindhoven, The Netherlands
- P3.14 Deposition characterization of inorganic thin films by using UV-enhanced Atomic Layer Deposition**
Jin Won Jung, Kwan Hyuck Yoon, Myung Mo Sung*
Chemistry, Hanyang University, Haengdang-dong, Seongdong-gu, Seoul, Korea

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P3.15 Si-C-N-Fe thin films, obtained by thermal decomposition of volatile tris(diethylamino)silane and ferrocene mixture

R. Pushkarev^{1*}, N. Fainer¹, E. Maximovskii¹, Y. Rumyantsev¹, V. Nadolinnyy¹, V. Kaichev^{1,2}, A. Gutakovskii³

¹Nikolaev Institute of Inorganic Chemistry, Novosibirsk, 630090, Russia

²Boreskov Institute of Catalysis, Novosibirsk, 630090, Russia

³Rzhanov Institute of Semiconductor Physics, Novosibirsk, 630090, Russia

P3.16 PECVD BC_xN_y films with tunable optical properties

V.S. Sulyaeva*, Y.M. Rumyantsev, I.V. Yushina, E.N. Ermakova, M.L. Kosinova
Nikolaev Institute of Inorganic Chemistry, 3, Acad. Lavrentiev Pr., Novosibirsk, 630090, Russia

P3.17 PECVD synthesis and optical properties of nanocrystalline h-BN films

I.S. Merenkov*, M.L. Kosinova, V.R. Shayapov
Nikolaev Institute of Inorganic Chemistry SB RAS, 3, Acad. Lavrentiev Ave., Novosibirsk, 630090, Russia

P3.18 ALD surface functionalization of nanostructured Fe₂O₃ polymorphs for light-assisted applications

M.E.A Warwick^{1*}, A. Gasparotto¹, G. Carraro¹, C. Maccato¹, D. Barreca², F. Rossi³, G. Salviati³, M. Tallarida⁴, F. Fresno⁵, U. Lavrenčič Štangar⁵

¹Department of Chemistry, Padova University and INSTM - 35131 Padova, Italy

²IENI-CNR and INSTM, Department of Chemistry, Padova University - 35131 Padova, Italy

³MEM-CNR, Parco Area delle Scienze, 43124 Parma, Italy

⁴Brandenburg University of Technology, 03046 Cottbus, Germany

⁵Laboratory for Environmental Research, Nova Gorica University, 5001 Nova Gorica, Slovenia

P3.19 Nanostructured Iron (III) oxides as photocatalysts for wastewater treatment and air purification

G. Carraro¹, C. Maccato^{1*}, A. Gasparotto¹, D. Barreca², C. Sada³, M. Cruz-Yusta⁴, L. Sánchez⁴

¹Department of Chemistry, Padova University and INSTM - 35131 Padova, Italy

²CNR-IENI and INSTM, Department of Chemistry, Padova University - 35131 Padova, Italy

³Department of Physics and Astronomy, Padova University - 35131 Padova, Italy

⁴Departamento de Química Inorgánica e Ingeniería Química, Universidad de Córdoba - 14071 Córdoba, Spain

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- P3.20 Fe₂O₃/CuO nanocomposites through hybrid CVD/sputtering approaches**
G. Carraro¹, A. Gasparotto¹, C. Maccato¹, E. Bontempi², F. Bilo², C. Sada³, D. Barreca^{4*}
¹Department of Chemistry, Padova University and INSTM - 35131 Padova, Italy
²Chemistry for Technologies Laboratory, Brescia University and INSTM - 25123 Brescia, Italy
³Department of Physics and Astronomy, Padova University - 35131 Padova, Italy
⁴CNR-ENI and INSTM, Department of Chemistry, Padova University - 35131 Padova, Italy
- P3.21 One pot PE-CVD route to F-doped iron oxides on Al₂O₃(0001) single crystals**
A. Gasparotto^{1*}, D. Barreca², E. Bontempi³, G. Carraro¹, C. Maccato¹, O. I. Lebedev⁴, C. Sada⁵, S. Turner⁶, G. Van Tendeloo⁶
¹Department of Chemistry, Padova University and INSTM, 35131 Padova, Italy
²CNR-ENI and INSTM, Department of Chemistry, Padova University, 35131 Padova, Italy
³Chemistry for Technologies Laboratory, University of Brescia, 25123 Brescia, Italy
⁴Laboratoire CRISMAT, UMR 6508, CNRS-ENSICAEN, 14050 Caen Cedex 4, France
⁵Department of Physics and Astronomy, Padova University, 35131 Padova, Italy
⁶EMAT, Antwerp University, 2020 Antwerpen, Belgium
- P3.22 Au/ε-Fe₂O₃ nanocomposite NO₂ gas sensors**
A. Gasparotto^{1*}, D. Barreca², G. Carraro¹, E. Comini³, C. Maccato¹, C. Sada⁴, G. Sberveglieri³
¹Department of Chemistry, Padova University and INSTM, 35131 Padova, Italy
²CNR-ENI and INSTM, Department of Chemistry, Padova University, 35131 Padova, Italy
³SENSOR Lab, Department of Information Engineering, Brescia University and CNR-INO, 25133 Brescia, Italy
⁴Department of Physics and Astronomy, Padova University, 35131 Padova, Italy
- P3.23 Aerosol assisted chemical vapour deposition of Ga-doped ZnO films for energy efficient glazing: Effects of doping concentration on the film growth behaviour and opto-electronic properties**
S.Q. Chen¹, R. Grau-Crespo², R. Binions^{1*}
¹School of Engineering and Materials Science, Queen Mary University of London, Mile End Road, London, UK
²Department of Chemistry, University of Reading, Whiteknights, Reading RG6 6AD, UK

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POSTER SESSION 3



P3.24 $\text{Co}_3\text{O}_4/\text{TiO}_2$ heterostructures by hybrid method

N. El Habra^{1*}, F. Visentin¹, R. Gerbasi¹, M. Favaro¹, M. M. Natile¹, L. Colazzo²,
M. Sambì²

¹IENI-CNR, Corso Stati Uniti 4, 35127 Padova, Italy

²Dipartimento di Scienze Chimiche - Università di Padova, Via Marzolo 1, 35131 Padova, Italy

P3.25 Effect of O_2 flow rate and temperature on the electrochromic response of WO_3

K. Psifis^{1,2}, D. Louloudakis^{1,3*}, D. Vernardou^{1,2}, E. Spanakis⁴, G. Papadimitropoulos⁵,
D. Davazoglou⁵, N. Katsarakis^{1,3,6}, E. Koudoumas^{1,3}

¹Center of Materials Technology and Photonics, School of Applied Technology,
Technological Educational Institute of Crete, 710 04 Heraklion, Crete, Greece

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15310 Agia Paraskevi, Greece

⁶Institute of Electronic Structure and Laser, Foundation for Research & Technology- Hellas,
P.O. Box 1527, Vassilika Vouton, 711 10 Heraklion, Crete, Greece

P3.26 Enhanced optical performance of APCVD zinc oxide via post growth plasma treatment at atmospheric pressure

J.L. Hodgkinson*, H.M. Yates, D.W. Sheel

Materials & Physics Research Centre, University of Salford, Salford, M5 4WT, UK

P3.27 Atomic layer deposition of TiO_2 and Al_2O_3 on nano-graphite films produced by PECVD: structure and field emission properties

Rinat R. Ismagilov^{1*}, Victor I. Kleshch¹, Alexander N. Obratsov^{1,2}

¹M.V. Lomonosov Moscow State University, Leninskie Gory 1, Moscow 119991, Russia

²University of Eastern Finland, Yliopistokatu 7, Joensuu 80100, Finland

WEDNESDAY, JULY 15, 2015

POSTER SESSION 3



P3.28 Titania-based antimicrobial coatings on stainless steel hospital fixtures

S. Krumdieck¹, S. Davies-Telwar², D. Lee², C. Bishop¹, S. Miya¹

¹Department of Mechanical Engineering, Private Bag 4800, University of Canterbury, Christchurch, 8041, New Zealand

²Koti Technologies, Inc., PO Box 29519, Christchurch, 8041, New Zealand

P3.29 Low temperature synthesis of iron oxide for photocatalytic application

D. Peeters¹, R. Beranek², A. Devi¹

¹Inorganic Materials Chemistry, Ruhr-University Bochum, Universitätsstrasse 150, 44801 Bochum, Germany

²Photoactive Materials Group, Ruhr-University Bochum, Universitätsstrasse 150, 44801 Bochum, Germany

P1.12 Tungsten and Rhenium coating by CVD on graphite and carbon composite materials for high temperature and high strength applications

G. Huot^{*}, A. Petitjean, P-O. Robert, and H. Poirel

Acerde, 354 voie Magellan, 73800, Ste Hélène du Lac, France

15.50 Excursion

boat trip on Lake Lucerne

THURSDAY, JULY 16, 2015

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SESSION 5: CVD of Nitrides – electronics and hard coatings

Chairman: J.L. Deschanvres

09.00 **INVITED**

Epitaxial lateral overgrowth of GaN on patterned sapphire substrate by growth mode control

D.-S. Kim¹, W. S. Jeong¹, S.J. Jung¹, B.H. Kang¹, C.M. Lee¹, S. Bae¹, J. Lee¹, J. Jhin², D. Byun^{1*}

¹Materials Science and Engineering, Korea University, Anam-dong 5-1, Seongbuk-gu, Seoul, 163-713, Republic of Korea

²Department of Chip Development, LG Innotek, 1493 Naepo-ri, Moonsan-eup, Paju-si, Gyeonggi-do, 413-901, Republic of Korea

09.30 **A combined ALD-CVD route for group 13 nitride based high frequency devices**

Henrik Pedersen*, Erik Janzén

Department of Physics, Chemistry and Biology, Linköping University, SE-581 83 Linköping, Sweden

09.50 **PEALD AlN: controlling growth and film crystallinity**

S. Banerjee*, A.A.I. Aarnink, A.Y. Kovalgin, J. Schmitz

MESA+ Institute for Nanotechnology, University of Twente, P.O Box 217, 7500 AE Enschede, The Netherlands

10.10 **Coffee Break**

10.40 **Aluminum nitride thin films deposited by plasma enhanced atomic layer deposition**

M. Benz^{1,2*}, S. Ponton^{1,2}, A. Crisci^{1,2}, S.Coindeau³, H. Roussel³, R. Martin³,

E. Blanquet^{1,2}, A. Mantoux^{1,2}

¹Univ. Grenoble Alpes, SIMAP, F-38000 Grenoble, France

²CNRS, SIMAP, F-38000 Grenoble, France

³CMTC, Grenoble INP-CNRS, 38402 Saint Martin d'Hères, France

11.00 **Crystallinity optimisation of boron nitride obtained by CVD in the system BCl₃/NH₃/H₂:**

Influence of the gas phase composition

P. Carminat*, P. Weisbecker, M. Cabantous, F. Rebillat, S. Jacques

Laboratoire des Composites Thermostructuraux, UMR-5801, 3 allée de la Boétie, Domaine Universitaire, 33600 Pessac, France

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11.20 Deposition, structure and properties of boron carbide coatings

G. Chollon^{1*}, C. Pallier¹, F. Teyssandier¹, B.J. Nordell², S. Karki², M.M. Paquette², A.N. Caruso², W.A. Lanford³, S.W. King⁴

¹Laboratoire des Composites Thermostructuraux (CNRS, CEA, SPS-Safran, UB1), University of Bordeaux, Pessac, 33600, France

²Department of Physics and Astronomy, University of Missouri-Kansas City, Kansas City, MO 64110, USA

³Department of Physics, University of Albany, Albany, NY 12222, USA

⁴Logic Technology Development, Intel Corporation, 5200 NE Elam Young Parkway, Hillsboro, OR 97124, USA

11.40 Deposition of composite matrix grade silicon carbide from SiHCl₃/C₃H₈/H₂

G. Laduye¹, L. David¹, C. Descamps^{1,2}, A. Delcamp¹, G. Vignoles¹, G. Chollon¹

¹Laboratoire des Composites Thermostructuraux (CNRS, CEA, SPS-Safran, UB1), University of Bordeaux, Pessac, 33600, France

²Herakles, Les Cinq Chemins, Le Haillan 33185, France

12.20 Lunch Break

SESSION 5: functional layers, multiferroics, highly functional materials CVD

Chairman: D. Byun

13.50 INVITED

In situ X-ray synchrotron and optical analysis of ZnO growth by atomic layer deposition and metal organic chemical vapor deposition

J.L. Deschanvres^{1*}, H. Renevier¹, R. Boichot², A. Crisci², A. Claudel¹, L. Tian¹, A. Chaker¹, C. Jimenez¹, V. Consonni¹, V. Cantelli¹, E. Blanquet², M.I. Richard³, T. Ouled³, C. Guichet³, O. Thomas³, S. Margueron⁴, G. Ciatto⁵, N. Aubert⁵, M.H. Chu⁵, D.D. Fong⁶

¹Univ. Grenoble Alpes, LMGP, F-38000 Grenoble, France CNRS, LMGP, F-38000 Grenoble, France

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³Aix-Marseille Universite, IM2NP-CNRS, Faculte des Sciences et Techniques, F-13397 Marseille Cedex, France

⁴LMOPs / Supelec, Univ. De Lorraine, 2 rue Edouard Belin F-57070 Metz, France

⁵Synchrotron SOLEIL - Beamline SIRIUS L'Orme des Merisiers, Saint Aubin, F-91192, Gif sur Yvette, France

⁶Argonne National Laboratory, Bldg 212/C222, 9700 S. Cass Ave., Argonne, IL, USA

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14.20 Silicon coating on very dense tungsten particles by fluidized bed CVD for nuclear application

F. Vanni¹, B. Caussat^{2*}, C. Ablitzer^{1*}, X. Iltis¹, M. Brothier¹

¹CEA, DEN, DEC/SPUA/LCU, F-13108 Saint-Paul-lez-Durance, France

²LGC, ENSIACET/INP Toulouse – UMR CNRS 5503, 4 allée Emile Monso, BP 44362, 31432 Toulouse Cedex 4, France

14.40 Study on the growth of silicon films in very high-frequency plasma under atmospheric pressure

S. Tamaki^{*}, T. Sakaguchi, W. Lin, T. Yamada, H. Ohmi, H. Kakiuchi, K. Yasutake

Department of Precision Science and Technology, Graduate School of Engineering, Osaka University, 2-1 Yamada-Oka, Suita, Osaka 565-0871, Japan

15.00 Pulsed-injection MOCVD of multiferroic BaMgF₄ thin films

S. Battiato^{1*}, B. Doisneau², H. Roussel², G.G. Condorelli¹, J.L. Deschanvres², C. Jimenez², D. Muñoz-Rojas², G. Malandrino¹

¹Dipartimento di Scienze Chimiche, Università di Catania, and INSTM, UdR Catania, Viale Andrea Doria 6, Catania 95125, Italy

²Univ. Grenoble Alpes, LMGP, F-38000 Grenoble, France CNRS, LMGP, F-38000 Grenoble, France

15.20 Relationship between Dy doping and multiferroic properties of MOCVD grown Bi_(1-x)Dy_xFeO₃

M.R. Catalano¹, G. Spedalotto¹, R. Lo Nigro², G.G. Condorelli¹, G. Malandrino^{1*}

¹Dipartimento di Scienze Chimiche, Università Catania, and INSTM UdR Catania, Viale A. Doria 6, I-95125 Catania, Italy

²Istituto per la Microelettronica e Microsistemi, IMM-CNR, Strada VIII 115, 95121 Catania, Italy

15.40 Coffee Break

SESSION 6: CVD processes deposits and characterization

Chairman: T. Noguchi

16.10 Highly conductive p-type CuCrO₂ thin films deposited by direct liquid injection metal-organic chemical vapour deposition

J.Crêpellière^{1*}, N. Bahlawane¹, S. Siebentritt², D.Lenoble¹

¹Luxembourg Institute of Science and Technology (LIST), 5 avenue des Hauts-Fourneaux, L-4362 Esch-sur-Alzette, Luxembourg

²Laboratory for Photovoltaics Physics and Materials Science Research Unit (University of Luxembourg), 162a avenue de la faïencerie, L-1511 Luxembourg, Luxembourg

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- 16.30 Surface kinetics of titanium isopropoxide in high vacuum chemical vapor deposition**
M. Reinke, Y. Kuzminykh*, P. Hoffmann
Laboratory for Advanced Materials Processing, Empa, Swiss Federal Laboratories for Materials Science and Technology, Feuerwerkerstr. 39, 3602 Thun, Switzerland and Laboratory for Photonic Materials and Characterization, Ecole Polytechnique Fédérale de Lausanne, Station 17, 1015 Lausanne, Switzerland
- 16.50 Chemical vapor deposition of niobium nitride and niobium titanium nitride thin films**
F. Mercier*, M. Benz, N. Tsavdaris, A. Crisci, R. Boichot, A. Mantoux, E. Blanquet
Univ. Grenoble Alpes, SIMAP, F-38000 Grenoble, France
and CNRS, SIMAP, F-38000 Grenoble, France
- 17.10 MOCVD growth of high quality c-axis and non-c axis oriented thin films of $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_8$ superconductor**
K. Endo¹*, S. Arisawa², H. Yamasaki³, T. Kaneko¹, P. Badica⁴
¹Kanazawa Institute of Technology (KIT), Hakusan, Ishikawa 924-0838, Japan
²National Institute for Materials Science, Tsukuba, Ibaraki 305-0047, Japan
³National Institute of Advanced Industrial Science and Technology, Tsukuba, Ibaraki 305-8568, Japan
⁴National Institute of Materials Physics, Magurele 077125, Romania
- 17.30 Glow discharge optical emission spectrometry for ultra fast depth profile characterization of CVD thin and thick films**
Patrick Chapon*, Célia Olivero, Simon Richard, Yuriy Popov
HORIBA Jobin Yvon, rue du canal, 91165 Longjumeau Cedex, France

THURSDAY, JULY 16, 2015

POSTER SESSION 4



17.50 POSTER SESSION 4:

Focused electron beam deposition; patterning; noble metal precursors

P4.1 Combining in-situ etching and deposition – FEBIE modified germanium nanowire devices with electrical contacts by FEBID gold

M.M. Shawrav, J. Mika, H.D. Wanzenboeck¹, P. Taus, Z.G. Gökdeniz, E. Bertagnolli
Institute of Solid State Electronics, Vienna University of Technology, Floragasse 7/1,
1040 Vienna, Austria

P4.2 Pushing nanomagnet logic into a higher dimension FEBID of 3-dimensional nanomagnetic arrays

H.D. Wanzenboeck¹*, M.M. Shawrav¹, M. Gavagnin¹, A. Persson², K. Gunnarsson², P. Svedlindh²,
M. Stöger-Pollach¹, E. Bertagnolli¹

¹Vienna University of Technology, Floragasse 7/1-E362, A-1040 Vienna, Austria

²Uppsala University, 751 05 Uppsala, Sweden

P4.3 Coating of nanostructures with ALD and PVD

Caspar Haverkamp^{1,2*}, Katja Höflich^{1,2}, Michael Latzel^{2,3}, Matthias Büchele³, Silke Christiansen^{1,2}

¹Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany

²Max Planck Institute for the Science of Light, Erlangen, Germany

P4.4 Nozzle-based injection systems for FEBID characteristics and limitations

H.D. Wanzenboeck¹*, M.M. Shawrav, G. Hochleitner, E. Bertagnolli

Vienna University of Technology, Floragasse 7/1-E362, A-1040 Vienna, Austria

P4.5 Interaction of WS₂ nanoparticles with ions and electrons studied by exposure to focused ion and electron beams

A. Laikhtman¹*, A. Fruchtman¹, G. Makrinich¹, A. Zak¹, M. Sezen²

¹Sciences Department, Holon Institute of Technology (HIT), 52 Golomb St., 5810201 Holon, Israel

²Nanotechnology Research and Application Center, Sabanci University, Orhanli, Tuzla,
34956 Istanbul, Turkey

P4.6 Rational design and development of yttrium precursors and their application in MOCVD of Y₂O₃

S. Karle¹*, T. de los Arcos², D. Rogalla³, A. Devi¹

¹Inorganic Materials Chemistry, Ruhr-University Bochum, 44801 Bochum, Germany

²Chair of Experimental Physics II, Ruhr-University Bochum, 44801 Bochum, Germany

³Dynamitron-Tandem-Laboratory (DTL) of RUBION, Ruhr-University Bochum, 44801 Bochum, Germany

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POSTER SESSION 4



P4.7 Electron-induced Formation of Cu nanoparticles from sequentially deposited Copper(II)oxalate

K. Rückriem¹, H. Vieker², A. Beyer², A. Götzhäuser², P. Swiderek^{1*}

¹Institute of Applied and Physical Chemistry, University of Bremen, D-28334 Bremen, Germany

²Physics of Supramolecular Systems, University of Bielefeld, D-33615 Bielefeld, Germany

P4.8 MOCVD growth of Pt films using a novel Pt(IV) compound as precursor

Dorovskikh S.I., Zharkova G.I., Shubin Yu. V, Morozova N.B.

Nikolaev Institute of Inorganic Chemistry SB RAS, 3, Lavrentiev Ave. 630090 Novosibirsk, Russia

P4.9 Selective area high vacuum CVD of titania on functionalized surfaces

M. Reinke*, Y. Kuzminykh, P. Hoffmann

Laboratory for Advanced Materials Processing, Empa, Swiss Federal Laboratories for Materials Science and Technology, Feuerwerkerstrasse 39, CH-3602 Thun, Switzerland

and Laboratory for Photonic Materials and Characterization, Ecole Polytechnique Fédérale de Lausanne, Station 17, CH-1015 Lausanne, Switzerland

P4.10 Heterobimetallic beta-diketonate complexes as CVD Precursors

V.V. Krisyuk*, A.E. Turgambaeva, S.V. Trubin, Y.V. Shubin, T.P. Koretskaya, I.K. Igumenov

Nikolaev Institute of Inorganic Chemistry SB RAS, Lavrentiev ave.3, Novosibirsk, 630090, Russian Federation

P4.11 Deposition of phosphorus-doped ruthenium layers by the single source approach

J. Jeschke, H. Lang*

Technische Universität Chemnitz, Institute of Chemistry, Inorganic Chemistry, 09107 Chemnitz, Germany

P4.12 Gaseous ternary Chromium-aluminium complexes as precursor for chemical vapour deposition

Mario Lessiak¹, Roland Haubner^{1*}, Reinhard Pitonak², Arno Köpf², Ronald Weissenbacher²

¹University of Technology Vienna, Institute of Chemical Technologies and Analytics, Getreidemark 9/164-CT, A-1060 Vienna, Austria

²Boehlerit GmbH & Co. KG, Forschung & Entwicklung, Werk VI Straße 100, 8605, Kapfenberg, Austria

P4.13 Absolute cross sections for electronic excitation of furan by electron impact

K. Regeta*, M. Allan

Université de Fribourg, Chemin du Musée 9, 1700 Fribourg, Switzerland

THURSDAY, JULY 16, 2015

POSTER SESSION 4



- P4.14 Monomeric trimethylplatinum beta-diketonate derivatives as MOCVD precursors for platinum film deposition**
Zharkova G.I., Dorovskikh S.I., Morozova N.B.
Nikolaev Institute of Inorganic Chemistry SB RAS, 3, Lavrentieva Ave. 630090 Novosibirsk, Russia
- P4.15 Brominated chemistry for CVD of electronic grade SiC**
Henrik Pedersen*, Milan Yazdanfar, Örjan Danielsson, Olle Kordina, Erik Janzén
Department of Physics, Chemistry and Biology, Linköping University, SE-581 83 Linköping, Sweden
- P4.16 Effect of Ag metal on the electrochemical response of vanadium oxides grown by AACVD**
D. Louloudakis^{1,2}, D. Vernardou¹, E. Spanakis³, N. Katsarakis^{1,4,5}, E. Koudoumas^{1,5}, I. Kazadojev⁶, S. O'Brien⁶, I. Povey⁶, M. Pemble⁶
¹Center of Materials Technology & Photonics, School of Applied Technology, Technological Educational Institute of Crete, 710 04 Heraklion, Crete, Greece
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⁵Department of Electrical Engineering, School of Applied Technology, Technological Educational Institute of Crete, 710 04 Heraklion, Crete, Greece
⁶Tyndall National Institute, University College Cork, Lee Maltings, Prospect Row, Cork, Ireland
- P4.17 Low temperature chemical vapor deposition of W-containing films from W(CO)₆**
V. Krisyuk¹, T. Koretskaya¹, A. Turgambaeva¹, S. Trubin¹, O. Debieu², T. Duguet², I. Igumenov¹, C. Vahlas²
¹Nikolaev Institute of Inorganic Chemistry SB RAS, Lavrentiev ave.3, Novosibirsk, 630090, Russian Federation
²CIRIMAT, UPS/INPT/CNRS, ENSIACET, 4 Allée Emile Monso, 31030 Toulouse cedex 4, France
- P4.18 Formation of hierarchically porous titanium dioxide films using a self-templating mechanism**
G. Hyett*, N. Platt, K. Kaye, G. Limburn
University of Southampton, Highfield Campus, Southampton, SO16 1BJ, UK
- P4.19 Influence of the deposition conditions on the formation of rare earth doped Yttrium oxy-fluoride**
S. Zhang, E.L. Payrer, H. Roussel, C. Jiménez, J.L. Deschanvres*
Univ. Grenoble Alpes, LMGP, F-38000 Grenoble, France and
CNRS, LMGP, F-38000 Grenoble, France
- 19.50 Conference Dinner**

FRIDAY, JULY 17, 2015

PROGRAM



SESSION 5: Structured Deposition – FEBID

Chairman: Anjana Devi

09.00 INVITED

Carrier gas controlled precursor delivery a way to increase process control in FEBID

H.D. Wanzenboeck*, M.M. Shawrav, S. Wachter, P. Taus, E. Bertagnolli

Vienna University of Technology, Institute for Solid State Electronics, Floragasse 7/1-E362, A-1040 Vienna, Austria

09.30 Using energetic jets to enable new modes of focused electron beam induced processing of nanomaterials

M. Henry, J. Fisher, S. Kim, P.A. Kottke, A.G. Fedorov*

George W. Woodruff School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA 30332-0405, USA

09.50 Optical Properties of Electron-Beam-Induced-Deposition-Based Metamaterial

P. Wozniak^{1,2}, K. Hoeflich^{3,1*}, G. Broenstrup^{1,3}, P. Banzer^{1,2}, S. Christiansen^{3,1}, G. Leuchs^{1,2}

¹Max Planck Institute for the Science of Light, Guenther-Scharowsky-Str.1, D-91058 Erlangen, Germany

²Institute of Optics, Information and Photonics, Friedrich-Alexander-University Erlangen-Nuernberg, Staudtstr. 7/B2, D-91058 Erlangen, Germany

³Helmholtz Centre Berlin for Materials and Energy, Institute of Nanoarchitectures for Energy Conversion, Hahn-Meitner-Platz 1, D-14109 Berlin, Germany

10.10 Coffee Break

10.40 MOCVD of Ir-containing coatings for medicine application: Precursors and processes

Vikulova E.S., Ilyin I.Yu., Karakovskaya K.I., Piryazev D.A., Zelenina L.N., Sysoev S.V., Gelfond N.V., Morozova N.B.

Nikolaev Institute of Inorganic Chemistry SB RAS, 3, Lavrentiev Ave. 630090 Novosibirsk, Russia

11.00 New Cu ketoiminates as precursors for the deposition of copper and copper oxide thin films

S. Karle*, A. Devi

¹Inorganic Materials Chemistry, Ruhr-University Bochum, 44801 Bochum, Germany

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PROGRAM



- 11.20 **The design of metal-organic and organometallic precursors for gas phase deposition processes**
H. Lang
Technische Universität Chemnitz, Institute of Chemistry, Inorganic Chemistry,
09107 Chemnitz, Germany
- 11.40 **Hotwire assisted ALD of tungsten films:
In-situ study of the interplay between ALD, CVD and etching modes**
Mengdi Yang*, A.A.I. Aarnink, Alexey Y. Kovalgin, Jurriaan Schmitz, Rob Wolters
MESA+ Institute for Nanotechnology, University of Twente, P.O Box 217,
7500AE Enschede, The Netherlands
- 12.00 **Closing Ceremony**
- 12.20 **Lunch Break**

Further meetings and information

Thursday July 16: 18.50 Cost Celina action – M2 meeting

Thursday July 16: 19.20 EuroCVD board meeting

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