# RSD 2017 – CONFERENCE PROGRAM

## Monday morning, 4\textsuperscript{th} December

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30</td>
<td>Registration</td>
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<tr>
<td>8:50</td>
<td>Conference opening</td>
</tr>
</tbody>
</table>

## ORAL PRESENTATIONS (9:00 – 10:15)

**Chairman:** J. Vlček, *University of West Bohemia, Czech Republic*

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
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</thead>
</table>
| 9:00   | MII     | **Invited talk**
          | **Quantum mechanically guided material design and experimentally guided quantum mechanical calculations**          |
          |         | J.M. Schneider
          |         | *Materials Chemistry, RWTH Aachen University, Aachen, Germany*                                                      |
| 9:30   | MR1     | **Oxygen vacancy stabilized zirconia thin films: Synthesis and properties**                                          |
          |         | S. Konstantinidis\(^1\), M. Raza\(^1\), D. Cornil\(^2\), J. Cornil\(^2\), S. Lucas\(^3\), J.F. Pierson\(^4\),  |
          |         | P. Boulet\(^4\), H. Rinnert\(^4\), D. Horwat\(^4\), L. dos Santos Gómez\(^5\), V. Esposito\(^5\),                 |
          |         | S. Sanna\(^5\), R. Snyders\(^1\)                                                                                   |
          |         | \(^1\)Laboratory of Plasma-Surface Interaction Chemistry, University of Mons, Mons, Belgium                         |
          |         | \(^2\)Service de Chimie des Matériaux Nouveaux, University of Mons, Mons, Belgium                                    |
          |         | \(^3\)LARN, University of Namur, Namur, Belgium                                                                     |
          |         | \(^4\)Institut Jean Lamour, CNRS, Université de Lorraine, Nancy, France                                              |
          |         | \(^5\)Department of Energy Conversion and Storage, Technical University of Denmark, Roskilde, Denmark               |
| 9:45   | MR2     | **Local epitaxial growth and self-assembled growth of vertically aligned columns in copper oxide thin films**        |
          |         | J.F. Pierson\(^1\), Y. Wang\(^1\), J. Ghanbaja\(^1\), S. Bruyère\(^1\), F. Soldera\(^2\), D. Horwat\(^1\),        |
          |         | F. Mücklich\(^2\)                                                                                                 |
          |         | \(^1\)Institut Jean Lamour (UMR CNRS 7198), Université de Lorraine, Nancy, France                                   |
          |         | \(^2\)Department for Materials Science, Functional Materials, Saarland University, Saarbrücken, Germany            |
| 10:00  | MR3     | **Formation and morphological evolution of 3D atomic islands on weakly-interacting substrates**                      |
          |         | V. Gervilla\(^1\), B. Lü\(^1\), G. Almyras\(^1\), J.E. Greene\(^2,3\), K. Sarakinos\(^1\)                        |
          |         | \(^1\)Nanoscale Engineering Division, Department of Physics, Chemistry and Biology, Linköping University, Linköping, Sweden |
          |         | \(^2\)Thin Film Physics Division, Department of Physics, Chemistry and Biology, Linköping University, Linköping, Sweden |
          |         | \(^3\)Materials Science and Physics Departments, University of Illinois, Urbana, Illinois, USA                        |

**10:15 – 10:45 Coffee break**
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<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>10:45</td>
<td>Invited talk</td>
<td>Control of micro- and nanostructure in transition metal nitrides and borides: Recent advances</td>
<td>I. Petrov, G. Greczynski, J. Rosen, J. Birch, L. Hultman, J.E. Greene, University of Illinois, Urbana, Illinois, USA</td>
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</tbody>
</table>
|        | MI2         | *Invited talk*                                                        | 1. Frederick Seitz Materials Research Laboratory and Materials Science Department, University of Illinois, Urbana, Illinois, USA  
2. Department of Physics (IFM), Linköping University, Linköping, Sweden |
|        |             | *Age hardening in hard and tough Ta-Al-N coatings*                    | 1. Department of Experimental Physics, Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava, Slovakia  
2. Institute of Materials and Machine Mechanics SAS, Bratislava, Slovakia  
3. ICAMS, Ruhr-Universität Bochum, Bochum, Germany  
4. Department of Physics, Chemistry, and Biology (IFM), Linköping University, Linköping, Sweden  
5. Slovak University of Technology in Bratislava, University Science Park Bratislava Centre, Bratislava, Slovakia  
6. Institute of Inorganic Chemistry, Slovak Academy of Sciences, Bratislava, Slovakia |
| 11:30  | MR5         | Reactive sputtering of high entropy alloys with nitrogen – Tuning the unit cell  | R. Dedoncker, D. Depla  
Department of Solid State Sciences, Ghent University, Ghent, Belgium |
|        |             | *Mechanical properties of ternary V-Mo-N and quaternary V-Mo-Al-N coatings* | 1. Department of Experimental Physics, Faculty of Mathematics, Physics and Informatics, Comenius University in Bratislava, Bratislava, Slovakia  
2. Institute of Materials and Machine Mechanics SAS, Bratislava, Slovakia  
3. Thin Film Physics Division, Department of Physics, Chemistry, and Biology (IFM), Linköping University, Linköping, Sweden  
4. ICAMS, Ruhr-Universität Bochum, Bochum, Germany |
| 12:00  |             | Lunch                                                                 | 12:00 – 13:00 Lunch |
## Monday afternoon, 4th December

### ORAL PRESENTATIONS (13:00 – 14:15)

**Chairman: I. Petrov, University of Illinois, USA**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Presenters</th>
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<tbody>
<tr>
<td>13:00</td>
<td><strong>MI3</strong></td>
<td>Invited talk Durable smart and multifunctional optical coatings for energy saving and anticounterfeiting – New opportunities for pulsed reactive plasmas</td>
<td>L. Martinu, B. Baloukas, F. Blanchard, S. Loquai. <em>Functional Coating and Surface Engineering Laboratory, Department of Engineering Physics, Polytechnique Montreal, Quebec, Canada</em></td>
</tr>
<tr>
<td>13:30</td>
<td><strong>MR7</strong></td>
<td>Controlled reactive HiPIMS – Effective technique for low-temperature (300 °C) synthesis of VO₂ films with semiconductor-to-metal transition</td>
<td>D. Kolenatý, J. Vlček, T. Kozák, J. Houška, R. Čerstvý. <em>Department of Physics and NTIS - European Centre of Excellence, University of West Bohemia, Plzeň, Czech Republic</em></td>
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</table>
| 13:45  | **MR8** | Tailoring optical and electrochemical properties of ITO films deposited by means of reactive magnetron sputtering | V. Stranák, P. Sezems ký, D. Burnat, J. Kratochvíl, H. Wulff, Z. Hubicka, M. Cada, R. Bogdanowicz, M. Smietana. *1Institute of Physics, University of South Bohemia, Ceske Budejovice, Czech Republic
2Institute of Microelectronics and Optoelectronics, Warsaw University of Technology, Warsaw, Poland
3Institute of Physics, University of Greifswald, Greifswald, Germany
4Institute of Physics, Academy of Science of the Czech Republic, Prague, Czech Republic
5Faculty of Electronics, Telecom. and Informatics, Gdansk University of Technology, Gdansk, Poland* |
2University of Basel, Department of Physics, Basel, Switzerland* |

### 14:15 – 14:45 Coffee break

### 14:45 – 15:50 Transfer to the university
## ORAL PRESENTATIONS (16:00 – 17:15)

**Chairman: J. Musil, University of West Bohemia, Czech Republic**

### 16:00

**Invited talk**

**MI4**

*Fundamental properties of TM nitrides: Materials design strategies for extreme properties*

J.E. Greene\(^1,2,3\)

\(^1\)Depts. of Materials Science and Physics, University of Illinois, Urbana, Illinois, USA  
\(^2\)Physics Department, Linköping University, Linköping, Sweden  
\(^3\)Mat. Sci. Dept, National Taiwan University of Science & Technology, Taipei, Taiwan

### 16:30

**MR10**

*Pulsed reactive sputtering of chromium nitride from 12.5 to 87.5% of duty cycle, at 62.5 to 5000 Hz*

E. Haye, S. Lucas, J.-J. Pireaux

*Research Centre for the Physics of Matter and Radiation (PMR), University of Namur, Namur, Belgium*

### 16:45

**MR11**

*Systematics in reactive ion beam sputter deposition of TiO\(_2\)*

C. Bundesmann, T. Lautenschläger, D. Spemann, H. Neumann

*Leibniz Institute of Surface Modification, Leipzig, Germany*

### 17:00

**MR12**

*B-based coatings prepared by magnetron sputtering and cathodic arc co-deposition*

O. Zindulka, M. Jílek, V. Sochora, I. Fojtl

*SHM, s.r.o., Šumperk, Czech Republic*

### 17:15 – 17:45

*Light refreshment*

### 17:45 – 18:45

*Visit of the facilities*

### 19:00

*Transfer to the hotel*
**Tuesday morning, 5th December**

**ORAL PRESENTATIONS (8:30 – 10:00)**

Chairman: D. Depla, *Ghent University, Belgium*

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>8:30</td>
<td><em>Invited talk</em></td>
<td>Model calculation and visualization of time-dependent reactive gas mass balance change in Ti-O&lt;sub&gt;2&lt;/sub&gt; reactive sputtering</td>
<td>E. Kusano, <em>Advanced Materials Center, Kanazawa Institute of Technology, Hakusan, Japan</em></td>
</tr>
<tr>
<td>9:00</td>
<td><em>TR1</em></td>
<td>Evolution of titanium atom and ion density in reactive HiPIMS – Impact on hysteresis curve shape</td>
<td>M. Fekete&lt;sup&gt;1&lt;/sup&gt;, K. Bernátová&lt;sup&gt;1&lt;/sup&gt;, P. Klein&lt;sup&gt;1,2&lt;/sup&gt;, J. Hnilica&lt;sup&gt;1,2&lt;/sup&gt;, P. Vašina&lt;sup&gt;1,2&lt;/sup&gt;</td>
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<td>&lt;sup&gt;1&lt;/sup&gt;Department of Physical Electronics, Faculty of Science, Masaryk University, Brno, Czech Republic</td>
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<td>&lt;sup&gt;2&lt;/sup&gt;CEPLANT, R&amp;D Centre for Low-Cost Plasma and Nanotechnology Surface Modifications, Faculty of Science, Masaryk University, Brno, Czech Republic</td>
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<tr>
<td>9:15</td>
<td><em>TR2</em></td>
<td>Transition mode sputtering of Al&lt;sub&gt;2&lt;/sub&gt;O&lt;sub&gt;3&lt;/sub&gt; – Hysteresis and process stability of large Al targets</td>
<td>M. Heintze, I. Luciu, <em>TRUMPF Hüttinger GmbH + Co. KG, Freiburg, Germany</em></td>
</tr>
<tr>
<td>9:30</td>
<td><em>TR3</em></td>
<td>Plasma and floating potentials in magnetron discharges</td>
<td>M. Jaroš, J. Musil, <em>Department of Physics and NTIS – European Centre of Excellence, University of West Bohemia, Plzeň, Czech Republic</em></td>
</tr>
<tr>
<td>9:45</td>
<td><em>TR4</em></td>
<td>Long-term stability and disappearing anode effects during reactive DC and pulsed bipolar magnetron sputtering of Al&lt;sub&gt;2&lt;/sub&gt;O&lt;sub&gt;3&lt;/sub&gt;</td>
<td>P. Mareš, S. Kadlec, A. Marek, <em>HVM Plasma spol. s r.o., Praha, Czech Republic</em></td>
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</tbody>
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**10:00 – 10:30 Coffee break**
## ORAL PRESENTATIONS (10:30 – 12:00)

**Chairman: L. Martinu, Polytechnique Montreal, Canada**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<th>Authors</th>
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</thead>
</table>
| 10:30  | TI2     | Invited talk Synchronised external magnetic fields applied in HiPIMS enhance plasma generation in the race track as well as plasma transport to the substrate | M. Bilek\(^1,2,3\), R. Ganesan\(^1\), B. Akhavan\(^1\), H. Najafiashtiani\(^1\), D.G McCulloch\(^4\), D.R. McKenzie\(^1\)  
\(^{1}\)School of Physics, University of Sydney, Sydney, Australia  
\(^{2}\)School of Aerospace, Mechanical and Mechatronic Engineering, University of Sydney, Sydney, Australia  
\(^{3}\)Australian Institute of Nanoscale Science and Technology, University of Sydney, Sydney, Australia  
\(^{4}\)Microscopy and Microanalysis Facility, RMIT University, Melbourne, Australia |
| 11:00  | TR5     | Ion energy distributions in magnetron sputtering: Questions remain even after detailed measurements of the plasma potential | A. Anders\(^1,2\)  
\(^{1}\)Lawrence Berkeley National Laboratory, Berkeley, USA  
\(^{2}\)Leibniz Institute of Surface Modification, Leipzig, Germany |
| 11:15  | TR6     | Arcing in high power impulse magnetron sputtering: Review of physical background and arcing mitigation methods | W. Gajewski, A.W. Oniszczuk, P. Róžański, P. Lesiuk, P. Ozimek  
TRUMPF Huettinger, Zielonka, Poland |
| 11:30  | TR7     | Spokes occurrence in HiPIMS discharge at different magnetic field strengths | J. Hnilica, M. Šlapanská, P. Klein, M. Fekete, P. Vašina  
Department of Physical Electronics, Masaryk University, Brno, Czech Republic |
| 11:45  | TR8     | The application of a short positive voltage reversal in reactive HIPIMS: Enhanced deposition rate and improved coating properties | I. Fernández-Martínez\(^1,6\), V. Bellido-González\(^2\), J.A. Santiago\(^3\), L. Mendizábal\(^4\), M. Monclús\(^5\), R. González-Arrabal\(^5\), J. Molina\(^3\), A. Wennberg\(^1,6\)  
\(^{1}\)Nano4Energy SL, Madrid, Spain  
\(^{2}\)Gencoa Ltd, Liverpool, United Kingdom  
\(^{3}\)Imdea Materiales, Madrid, Spain  
\(^{4}\)Fundación Tekniker, Eibar, Spain  
\(^{5}\)Instituto Fusión Nuclear, Escuela de Industriales de la UPM, Madrid, Spain  
\(^{6}\)hip-VAB, Stocksund, Sweden |

**12:00 – 13:00 Lunch**
Tuesday afternoon, 5th December

ORAL PRESENTATIONS (13:00 – 14:45)

Chairman: E. Kusano, Kanazawa Institute of Technology, Japan

13:00  
**Invited talk**

**TI3**  
Key features of reactive high power impulse magnetron sputtering

D. Lundin\(^1\), N. Brenning\(^{1,2,3}\), J.T. Gudmundsson\(^{1,2,4}\), M.A. Raadu\(^2\), T.J. Petty\(^1\), F. Cemin\(^1\), T. Minea\(^1\)

\(^1\)Laboratoire de Physique des Gaz et Plasmas – LPGP, Université Paris–Sud, Université Paris–Saclay, Orsay, France
\(^2\)Department of Space and Plasma Physics, School of Electrical Engineering, KTH – Royal Institute of Technology, Stockholm, Sweden
\(^3\)Plasma and Coatings Physics Division, IFM–Materials Physics, Linköping University, Linköping, Sweden
\(^4\)Science Institute, University of Iceland, Reykjavik, Iceland

13:30  
**TR9**  
Modelling the dynamics of processes in reactive HiPIMS deposition of oxide films

T. Kozák, J. Vlček

Department of Physics and NTIS – European Centre of Excellence, University of West Bohemia, Plzeň, Czech Republic

13:45  
**TR10**  
Current dependency of the compound sputtering yield

R. Schelfhout, K. Strijckmans, D. Depla

Research group DRAFT, Department of Solid State Sciences, Ghent University, Ghent, Belgium

14:00  
**TR11**  
A novel method for the optimization of reactive sputtering processes

M. Fahland, T. Vogt

Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology, Dresden, Germany

14:15  
**Invited talk**

**TI4**  
Reactive HiPIMS through the eyes of a ‘simple’ model

K. Strijckmans, R. Schelfhout, F. Moens, D. Depla

DRAFT – Department of Solid State Sciences, Ghent University, Ghent, Belgium

14:45 – 15:00 Coffee break

15:00 – 16:00 Posters

17:00 – 23:59 Pilsner Urquell Brewery – excursion and dinner
Wednesday morning, 6th December

ORAL PRESENTATIONS (8:30 – 10:00)

Chairman: J.M. Schneider, RWTH Aachen University, Germany

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Speakers</th>
<th>Institutions</th>
</tr>
</thead>
</table>
| 8:30   | Invited | Reactive and non-reactive sputter deposition of MoO_x thin films     | J.M. Pachhofer\(^1\), R. Franz\(^1\), A. Tarazaga Martín-Luengo\(^2\), E. Franzke\(^3\), A. Bonanni\(^2\), H. Köstenbauer\(^3\), J. Winkler\(^3\), C. Mitterer\(^4\) | \(^1\) Department of Physical Metallurgy and Materials Testing, Montanuniversität, Leoben, Austria  
\(^2\) Institute of Semiconductor and Solid State Physics, Johannes Kepler University, Linz, Austria  
\(^3\) Business Unit Coating, PLANSEE SE, Reutte, Austria |
| 9:00   | WRI     | The role of oxygen in sputtered AZO and ZnO films used for ZnO nanorod-based device | P. Novák\(^1\), J. Briscoe\(^2\), T. Kozák\(^3\), M. Kolega\(^1\), J. Savková\(^1\) | \(^1\) New Technologies – Research Centre, University of West Bohemia, Plzeň, Czech Republic  
\(^2\) Materials Research Institute, Queen Mary University of London, London, UK  
\(^3\) Department of Physics and NTIS – European Centre of Excellence, University of West Bohemia, Plzeň, Czech Republic |
| 9:15   | WR2     | Control of process pressure and Ar/O\(_2\) ratio in reactive-HiPIMS to deposit high-stability and high-mobility zinc oxynitride films for thin-film transistor devices | R. Ganesan\(^1\), M. Trant\(^1\), K. Thorwarth\(^1\), H.J. Hug\(^1\), M.M.M. Bilek\(^2\), D.R. McKenzie\(^2\) | \(^1\) EMPA Materials Science and Technology, Dübendorf, Switzerland  
\(^2\) The School of Physics, The University of Sydney, Sydney, Australia |
| 9:30   | WR3     | Deposition of Nb doped TiO\(_2\) thin films using a hybrid CVD/HiPIMS technique | D. Donaghy\(^1\), J. Kulczyk-Malecka\(^2\), P. Chalker\(^3\), P.J. Kelly\(^2\), J.W. Bradley\(^1\) | \(^1\) Department of Electrical and Electronic Engineering, University of Liverpool, Liverpool, UK  
\(^2\) Surface Engineering Group, Manchester Metropolitan University, Manchester, UK  
\(^3\) Department of Mechanical, Materials and Aerospace Engineering, University of Liverpool, Liverpool, UK |
| 9:45   | WR4     | Nb\(_2\)O\(_{5-x}\) vs. Nb targets for DC reactive magnetron sputter PVD of thin optical films | V. van Karsbergen, N. Weinberger, G. Strauss | Material Center Tyrol, Institute for Material Technology, University of Innsbruck, Innsbruck, Austria |

10:00 – 10:30 Coffee break
## ORAL PRESENTATIONS (10:30 – 12:00)

**Chairman:** C. Mitterer, *Montanuniversität Leoben, Austria*

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
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<tbody>
<tr>
<td>10:30</td>
<td>WI2</td>
<td><em>Invited talk</em> Improvement of deposition rate of high power impulse magnetron sputtering system using hybrid and superimposition approaches*</td>
<td>J.-W. Lee(^1),(^2),(^3), Y.-W. Su(^1), Ch.-Y. Lu(^1), W. Diyatmika(^1), B.-S. Lou(^4)</td>
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<tr>
<td></td>
<td></td>
<td>1<em>Department of Materials Engineering, Ming Chi University of Technology, New Taipei, Taiwan</em></td>
<td>2<em>Center for Thin Films Technologies and Applications, Ming Chi University of Technology, New Taipei, Taiwan</em></td>
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<td>3<em>College of Engineering, Chang Gung University, Taoyuan, Taiwan</em></td>
<td>4<em>Chemistry Division, Center of General Education, Chang Gung University, Taoyuan, Taiwan</em></td>
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<tr>
<td>11:00</td>
<td>WR5</td>
<td><em>HPPMS deposition from composite targets: Effect of two orders of magnitude target power density changes on the composition of sputtered Cr-Al-C thin films</em></td>
<td>H. Rueß(^1), M. to Baben(^1),(^2), S. Mráz(^1), L. Shang(^1), P. Polcik(^3), S. Kolozsvari(^3), M. Hans(^1), D. Primetzhofer(^4), J.M. Schneider(^1)(^4)</td>
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<td>1<em>Materials Chemistry, RWTH Aachen University, Aachen, Germany</em></td>
<td>2<em>GTT-Technologies, Herzogenrath, Germany</em></td>
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<td>3<em>Plansee Composite Materials GmbH, Lechbruck am See, Germany</em></td>
<td>4<em>Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden</em></td>
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<tr>
<td>11:15</td>
<td>WR6</td>
<td><em>Study on giant negative piezoresistance effect in diamond like carbon films deposited by reactive magnetron sputtering of Ni target</em></td>
<td>Š. Meškinis, A. Vasiliauskas, S. Tamulevičius, R. Gudaitis</td>
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<td><em>Kaunas University of Technology, Institute of Materials Science, Kaunas, Lithuania</em></td>
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<td>11:30</td>
<td>WR7</td>
<td><em>Inside gas aggregation cluster source: In-operando study of Ti/TiO(_x) nanoparticles production</em></td>
<td>J. Kousal(^1), A. Shelemin(^1), A. Kolpaková(^2), P. Kudrna(^2), M. Tichý(^2), H. Biederman(^1)</td>
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<td></td>
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<td>1<em>Department of Macromolecular Physics, Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic</em></td>
<td>2*Department of Surface and Plasma Science, Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic</td>
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<tr>
<td>11:45</td>
<td>WR8</td>
<td><em>Plasma metal and metal oxides nanoparticles coatings for new functional properties</em></td>
<td>A. Usoltseva, C. Rigaux, C. Vandenabeele, S. Wallon, S. Matioudaki, S. Lucas</td>
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<td><em>Namur University (LARN-PMR), Namur, Belgium</em></td>
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<td>12:00</td>
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<td><em>12:00 – 13:00 Lunch</em></td>
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Wednesday afternoon, 6th December

ORAL PRESENTATIONS (13:00 – 14:15)

Chairman: J.-W. Lee, Ming Chi University of Technology, Taiwan

13:00  **Invited talk**
**WI3**  Industrial challenges and applications of reactively sputtered hard coatings
J. Vyskočil, S. Kadlec, P. Mareš, T. Mates
*HVM Plasma spol. s r. o., Praha, Czech Republic*

13:30  **HiPIMS makes reactive sputtering the future technology for premium cutting tools**
**WR9**
T. Leyendecker¹, L. Zima², C. Schiffers¹
¹CemeCon AG, Würselen, Germany
²CemeCon s.r.o., Ivančice, Czech Republic

13:45  **Reactive sputter deposition of Al₂O₃ layers on large area substrates**
**WR10**
D. Gloess¹, T. Goschurny¹, H. Nizard¹², A. Drescher¹, M. Gittner¹, H. Bartzsch¹, P. Frach¹
¹Fraunhofer-Institut für Organische Elektronik, Elektronenstrahl- und Plasmatechnik FEP, Dresden, Germany
²Technische Universität Dresden, Institut für Festkörperelektronik (IFE), Dresden, Germany

14:00  **Plasma enhanced reactive sputter deposition processes in application**
**WR11**
E. Schüngel, J. Weichart, S. Gees, S. Schwyn-Thöny
*Evatec AG, Trübbach, Switzerland*

14:15 – 14:45 Coffee break
### ORAL PRESENTATIONS (14:45 – 15:55)

Chairman: J. Vyskočil, *HVM Plasma spol. s r. o., Praha, Czech Republic*

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>14:45</td>
<td>Invited</td>
<td>Reactive HIPIMS and process control on industrial scale coating systems</td>
<td>H. Gerdes, J. Rieke, R. Bandorf, M. Vergöhl, G. Bräuer, <em>Fraunhofer IST, Braunschweig, Germany</em></td>
</tr>
<tr>
<td>15:15</td>
<td>WR12</td>
<td>Nanocomposite nc-TiC/a-C:H coatings: enhancement of coating properties by utilization of HiPIMS and Ni doping</td>
<td>P. Souček, J. Daniel, J. Hnilica, K. Bernátová, L. Zábranský, V. Buršiková, M. Stupavská, P. Vašina, <em>Department of Physical Electronics, Faculty of Science, Masaryk University, Brno, Czech Republic</em></td>
</tr>
<tr>
<td>15:30</td>
<td>WR13</td>
<td>Multilayered TiVN/TiSiN hard coatings – Mechanical properties and tribological performance</td>
<td>Y.-J. Weng, Y.-Y. Chang, <em>Department of Mechanical and Computer-Aided Engineering, National Formosa University, Yunlin, Taiwan</em></td>
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15:45 – 15:55 Conference closing