

6th KSS PROGRAMME

16.09.2013 Monday

8.00 – 10.00 Registration

(Building B8, AGH-University of Science and Technology in Krakow, Akademicka St.)

10.15. -10.45 Opening

(Building B8, AGH-University of Science and Technology in Krakow, Akademicka St.)

11. 00 – 12.30 Plenary Session

Chairmen: J. Banaś, P.J. Kulesza

D. D. Macdonald, *The Holy Grail: Toward a Single, Comprehensive Theoretical Basis for All Forms of Corrosion*

Ph. Marcus, *Passive Films on Metals and Alloys: Growth, Nanostructure, Local Electronic Properties and Localized Breakdown*

Lunch 12.30 – 14.00 (“TAWO”, Reymonta 13A St.)

Afternoon Session, 14.00 – 17.50

Chairmen: P. Marcus, G.T. Burstein

Electrochemical methods in corrosion science and material engineering (Invited Lecture)

1. W. Plieth, *Modelling and Simulation of Electrochemical Processes*
2. F.J. Vidal-Iglesias, J. Solla-Gullón, J.M. Pérez, J.M. Feliu, *Shell-Isolated Nanoparticle-Enhanced Raman Spectroscopy on Platinum Single Crystals*
3. M. Kosmulski, *Zeta potential in corrosion science*
4. A.W. Hassel, *Corrosion Screening of Materials by Means of Scanning Droplet Cell Microscopy with Downstream Analytics*

16.00 – 16.20 Coffee break

Session I Electrochemical methods in corrosion science and material engineering <i>Chairmen: J. Flis, S. Virtanen</i>	Session II Preparation and degradation of new materials for electrochemical science and technology <i>Chairmen: I. Saeki, Z. Stojek</i>
1. A. Zieliński, <i>New approach to the nanoimpedance microscopy</i>	1. <u>M. Janik-Czachor</u> , A. Kudelski, M. Pisarek, A. Roguska, <i>Silver-decorated self-organized nanotubular substrates for SERS detection of organic molecules</i>
2. P. Ślepski, <i>New application capabilities using electrochemical impedance spectroscopy with galvanostatic control</i>	2. <u>W. Vonau</u> , F. Gerlach, K. Ahlborn, <i>Electrochemical sensors in thick film technology</i>
3. <u>R. M. Souto</u> , J. Izquierdo, J. J. Santana, S. González, <i>Selected examples of in situ scanning electrochemical microscopy studies for the characterization of localized corrosion reactions</i>	3. <u>M. Mosiałek</u> , M. Dudek, P. Nowak, R. Socha, <i>Silver migration caused by polarization at the Ag/Al_{0.04}Sc_{0.06}Zr_{0.9}O_{1.95} interface</i>
4. <u>B. P. Wilson</u> , J. R. Searle, K. Yliniemi, D. A. Worsley, H. N. McMurray, <i>Use of 3D-SVET for investigation into the corrosion and degradation of painted steel samples</i>	4. P. R. Żabiński, <u>K. Mech</u> , R. Kowalik, <i>Modification of Cu-Ni Alloys by High Magnetic Field</i>

Welcome Party / Get together 19.00

(Building B8, AGH-University of Science and Technology in Krakow, Akademicka St.)

17.09.2013 Tuesday

9.00 – 10.30 Plenary Session

Chairmen: R.A. Hillman, D.D. Macdonald

F. Scholz *The Interaction of OH[•] Radicals with Metal Surfaces and with Molecular Layers on Metals*

G.T. Burstein *The Role of Temperature in Electrochemical and Corrosion Reactions: Cyclic Thermammetry*

10.30 – 10.50 Coffee break

Morning Session, 10.50 -13.00

Session III Electrochemical methods in corrosion science and material engineering - Preparation and degradation of new materials for electrochemical science and technology <i>Chairmen: V.K. Gupta, F.J. Vidal-Iglesias</i>	Session IV Corrosion, passivity and breakdown processes <i>Chairmen: W. Vonau, T. Zakroczymski</i>
<ol style="list-style-type: none">1. M. Danielewski, <i>Material science impact on electrochemistry: the bi-velocity formulation of the Nernst-Planck-Poisson problem</i> (Invited Lecture)2. S. Drensler, S. Milenkovic, A.W. Hassel, <i>Electrochemical processing of nanostructured materials using a Pourbaix diagram intersection approach</i>3. I. Saeki, Y. Toshima, <i>Analysis of co-deposition of Cr₂O₃ in Zn at various pH using Guglielmi's equation</i>4. Y. Toshima, I.Saeki, <i>Effect of surface adsorbed Zn ion on the co-deposition of Al₂O₃ and Cr₂O₃ particles</i>5. R. Zerdoumi, K. Oulmi, <i>A New Modified Ion ExchangeE Membrane without Polarization and Facilitation of Counter Ion Transfer under an Electrical Field</i>	<ol style="list-style-type: none">1. V. Vignal, H. Krawiec, S. Le Manchet, <i>Passivity and pitting corrosion of duplex stainless steels: Role of the microstructure and long-term ageing</i> (Invited Lecture)2. N.Tsyntsaru, V. Myrzak, P. Globa, A. Dikumar, <i>Corrosion of metals electrodepositing under pulse modes in AAO templates</i>3. Z. Szklarz, M. Wróbel, H. Krawiec, <i>The influence of crystallographic orientation of grains on corrosion behavior of aluminium in sodium chloride solution</i>4. M. Zwolińska, K. Załęgowski, A. Roguska, H. Garbacz, K.J. Kurzydłowski, <i>Anodic polarization of nanocrystalline titanium</i>5. U. Lelek-Borkowska, K. Banaś, J. Banaś, <i>The effect of water on passivation and corrosion of titanium in CH₃OH-LiClO₄ solutions</i>

Lunch 13.00 – 14.30 (“TAWO”, Reymonta 13A Str.)

Afternoon Session, 14.30 -16.45

Session V Preparation and degradation of new materials for electrochemical science and technology <i>Chairmen: A.W. Hassel, W. Plieth</i>	Session VI Corrosion resistant alloys, surface modification <i>Chairmen: H. Bala, I. Fis-Kabulska</i>
<ol style="list-style-type: none">1. N. Tsyntsaru, G. Kaziukaitis, H. Philipsen, J.-P. Celis, <i>Co-W nanocrystalline electrodeposits as barrier for interconnections applications</i>2. M. Tatko, M. Mosiałek, M. Dudek, G. Mordarski, E. Bielańska, J. Wojewoda-Budka, <i>Composite cathode material Ag-Ba_{0.5}Sr_{0.5}Co_{0.8}Fe_{0.2}O₃ for solid oxide fuel cells</i>3. P. Volovitch, M. Siebentritt, G. Lefèvre, F. Brisset, K. Ogle, <i>Mechanisms of hematite slurry electroreduction in high alkaline media</i>4. M.B. Dergacheva, K.A.Mit, K.A.Urazov, K.A Maeva, <i>Nanostructure of electrodeposited ZnS films</i>5. K. Mech, P. Żabiński, R. Kowalik, K. Fitzner, <i>Synthesis of Co – Pd Alloys by Co-electroreduction of [CoCl_x(H₂O)_{6-x}]^{2-x}; x = 1, 2 and [PdCl_y(H₂O)_{4-y}]^{2-y}; y = 3, 4 Complexes</i>	<ol style="list-style-type: none">1. S. Virtanen, <i>Biodegradable Mg alloys: Corrosion, surface modification, and biocompatibility considerations</i> (Invited Lecture)2. B. Burnat, T. Błaszczuk, A. Leniart, <i>Effects of serum proteins on long-term corrosion behavior of ISO 5832-9 alloy modified by titania coatings</i>3. A. Królikowski, M. Fica, M. Donten, <i>Nanocrystalline alloys of iron group metals with tungsten: corrosion resistance and electrocatalytic properties toward hydrogen evolution in sulfuric acid solution</i>4. M. Krzak, K. Szczepanowicz, Z. Taborb, G. Mordarski, P. Nowak, P. Warszyński <i>“Smart” nanocontainers and water traps as a novel approach to active anticorrosion protection by polymer coatings</i>5. H. Cesiulis, E. Vernickaite, N. Tsyntsaru, <i>Mapping of corrosion and mechanical properties of nanocrystalline Co-W alloys</i>

Poster Session 17.00 – 18.30

(Building B8, AGH-University of Science and Technology in Krakow, Akademicka St.)

18.09 Wednesday

9.00 – 10.30 Plenary Session

Chairmen: F. Scholz, J. Banaś

R. A. Hillman, K. S. Ryder, C. J. Zaleski, V. C. Ferreira, *Electrodeposition of metals from deep eutectic solvents: insights from combined gravimetric and optical measurements*

P.J. Kulesza, *Hybrid Nanostructured Materials for Electrochemical and Photoelectrochemical Energy Conversion and Storage*

10.30 – 10.50 Coffee break

Morning Session, 10.50 -13.00

Session VII Preparation and degradation of new materials for electrochemical science and technology <i>Chairmen: M. Janik-Czachor, M.B.Dergacheva</i>	Session VIII Hydrogen in metals <i>Chairmen: M. Danielewski, H. Krawiec</i>
1. T. Rapecki, M.Donten, <u>Z. Stojek</u> , <i>Electronucleation of silver on etched by radicals- and covered with thin polypyrrole film glassy carbon surface</i>	1. T. Zakroczymski, <i>Stress corrosion cracking and hydrogen embrittlement – similarities and dissimilarities</i> (Invited Lecture)
2. S. Modzelewska, M. Gniadek, T. Rapecki, <u>M.Donten</u> , <i>Tuning catalytic activity of thin layers of Au-PPy composites with hydroxyl radicals</i>	2. <u>H. Bala</u> , M. Dymek, L. Adamczyk, K. Giza, H. Drulis, <i>Hydrogen Diffusivity, Kinetics of H₂O/H₂ Charge Transfer and Corrosion Properties of LaNi₅-Powder, Composite Electrodes in 6M KOH Solution</i>
3. <u>V. K. Gupta</u> , A.K. Bhartia, <i>A New Cholesterol Biosensor based on MWCNT-ZnO Nanoparticles Using FFT Admittance Voltammetry and Flow Injection Analysis</i>	3. <u>I. Flis-Kabulska</u> , J. Flis, <i>Hydrogen permeation measurements for evaluation of surface changes on iron cathodes during alkaline water electrolysis</i>
4. <u>M. Starowicz</u> , M. Hajos, B. Stypuła, <i>Morfology, structure and properties of nanoparticles of oxides obtained during the anodic dissolution of metals in electrolytes with alcohol solvents</i>	4. <u>A. Gajek</u> , I. Flis-Kabulska, T. Zakroczymski, Cheng-Hsien Yang, Jeng-Kuei Chang, Wen-Ta Tsai, <i>Diffusion of hydrogen in magnesium studied by the electrochemical permeation method</i>
5. <u>A.K. Schuppert</u> , A.A. Topalov, J. Klemm, S. Cherevko, A. Savan, A. Ludwig, K.J.J. Mayrhofer, <i>Electrochemistry vs. Dissolution - Coupling of a Scanning Flow Cell to Online Mass Spectrometry</i>	5. <u>M. Dymek</u> , H. Bala, <i>Hydrogen Diffusivity in the Massive LaNi₅ Electrode Using Voltammetry Technique</i>

Lunch 13.00 – 14.30 (“TAWO”, Reymonta 13A Str.)

Poster Session 15.00 – 17.00/ Excursions 15.00-19.00

Banquet 19.00 – 23.00

Pałac pod Baranami, Rynek Główny 27(Market Square)

19.09 Thursday

Morning Session, 9.00 -11.30

Session IX Corrosion and electrochemical processes in aggressive environments <i>Chairmen: A. Królkowski, M. Dönten</i>	Session X Corrosion resistant alloys <i>Chairmen: V. Vignal, K. Miecznikowski</i>
<ol style="list-style-type: none">1. J. Jedliński, <i>Development Mechanism of the Protective Oxide Scale on Alumina-Forming High Temperature Materials: A Brief Survey</i> (Invited Lecture)2. F. Depentori, C. Forcellini, J. Laukart, F. Brunke, S. Benfer, C. Siemers, W. Fürbeth, <i>Oxidation of lanthanum and neodymium precipitates in free-machining titanium alloys</i>3. J. Banaś, B. Mazurkiewicz, W. Solarski, M. Gruszka, U. Lelek-Borkowska, A. Rogulska, M. Andrzejczuk, E. Ura-Bińczyk, M. Lewandowska, P. Żarnowiec, W. Kaca, <i>Biofouling and biocorrosion in geothermal plants of Polish Lowlands</i>	<ol style="list-style-type: none">1. P. Volovitch, M. Salguero-Azevedo, M. Serdechnova, T.N. Vu, K. Ogle, <i>Role of Mg, Al and Zn in aqueous corrosion of their binary and ternary alloys: microstructure effect or solution modification?</i>2. L. Kwiatkowski, A. Bałkowiec, A. Kapuścińska, J. Michalski, R. Lutze, P. Tomassi, <i>The effect of cold work of AZ31 alloy on its properties and corrosion behaviour in as-received and anodised form</i>3. K. Kamiński, M. A. Malik, <i>Corrosion resistance of magnesium matrix composites reinforced with SiC particles</i>

10.20 – 10.40 Coffee break

<ol style="list-style-type: none">1. S. Bouakkaz, K. Oulmi, D. Mellahi, <i>The adsorption and the inhibitory properties of penicillin G on the corrosion of Fe-19Cr stainless steel in HCl solution</i>2. M. Dudek, <i>Selected aspects of protection against corrosion for anode and electrolytic materials used in solid oxide fuel cells</i>	<ol style="list-style-type: none">1. I. Flis-Kabulska, J. Flis, Y. Sun, <i>Measurement of pH at the electrode surface for better understanding the corrosion behaviour of low-temperature plasma nitrided stainless steel</i>2. G. Palumbo, J. Banaś, <i>Electrochemical studies on the corrosion behavior of carbon steel in fracturing solution</i>
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11.30 Closing ceremony

Poster Presentation

- 1) L. Adamczyk, P. J. Kulesza, K. Miecznikowski, *Composite films of silicotungstic acid and poly-(3,4-ethylenedioxythiophene) and 4(pyrrole-1-yl) benzoic acid: electrochemical preparation*
- 2) I. Dobosz, W. Gumowska, M. Czapkiewicz, *Magnetic properties of Co nanowires electrodeposited in the pores of alumina membrane*
- 3) A. Dudek, A. Wrońska, *Characterisation of microstructure and functional properties of PM austeno-ferritic stainless steels after arc surface remelting*
- 4) A. Dudek, R. Kobylecki, M. Opydo, *Corrosion Behaviour and Fouling of Some Selected Steels in CFB Boiler*
- 5) K. Giza, H. Drulis, L. Folcik, *Effect of preparation method of metal hydride electrode on efficiency of hydrogen electrosorption process*
- 6) H. Kazimierczak, P. Ozga, Z. Świątek, *Effect of molybdenum on the corrosion resistance of Zn-Mo alloy layers on steel.*
- 7) D. Klimecka-Tatar, G. Pawlowska, *The effect of Nd₁₂Fe₇₇Co₅B₆ powder biencapsulation method on atmospheric corrosion of polymer bonded magnetic material*
- 8) J. P. Kollender, A. I. Mardare, A. W. Hassel, *Localised photoelectrochemistry on tungsten oxide based thin film material libraries*
- 9) I. Kot, H. Krawiec, *The corrosion resistance of AZ91 as-cast alloy in aqueous solution containing the Cl⁻ and SO₄²⁻ ions*
- 10) J. Loch, H. Krawiec and V. Vignal, *Passivity and corrosion behaviour of TiMo10Zr4 and Ti6Al4V alloys in Ringer's solution at 37°C: influence of the microstructure and pH*
- 11) R. Kowalik, K. Mech, P. Żabiński, *Microgravimetric studies of selenium electrodeposition onto different substrates.*
- 12) K. Miecznikowski, M. Murawska, *electrooxidation of ethylene glycol on platinum alloy nanoparticles dispersed in metal oxide matrix*
- 13) E. Owczarek, *The effect of isobutylotrioxysilane concentration on the protective properties of aging silane coatings on stainless steel*
- 14) M. Shaglouf, F. Al-Tahar, A. Patil, *The influences of fluid flow on electrochemical noise generation*
- 15) W. Simka, M. Sowa, R. P. Socha, J. Michalska, G. Dercz, A. Krzakala, *Modification of niobium surface via plasma electrolytic oxidation in silicate solutions*
- 16) W. Simka, M. Mosiałek, G. Nawrat, P. Nowak, L. Szyk-Warszyńska, J. Żak, A. Maciej, J. Szade, A. Winiarski, *Anodic oxidation of Ti-13Nb-13Zr alloy*
- 17) M. Słupska, P. Ozga, H. Kazimierczak, Z. Świątek, *Effect of tungsten on the corrosion resistance of tin-manganese alloys*
- 18) M. Stępień, P. Handzlik, K. Fitzner, *Synthesis of ZrO₂ nanotubes by anodization in inorganic and organic electrolytes*
- 19) E. Ura-Bińczyc, M. Lewandowska, *The corrosion resistance of nanocrystalline materials produced by hydrostatic extrusion*
- 20) A. Zieliński, K. Darowicki, *Contact nanoimpedance measurements*