



**10th INTERNATIONAL WORKSHOP ON
ELECTRODEPOSITED NANOSTRUCTURES**

20th-22nd March 2014 , Oberwesel am Rhein, Germany

PROGRAM

Organizers: Dr. Maria Eugenia Toimil-Molares, Dr. Ina Alber, Janina Krieg, Liana Movsesyan, and the Nanowire Group at GSI Helmholtz Centre, Materials Research Department

Sponsors:



10th International Workshop on Electrodeposited Nanostructures (EDNANO10)

20-22 March, 2014

Oberwesel am Rhein, Germany

Wednesday, March 19th

- 18:00 - 20:00 **Registration**
- 20:30 **Welcome drink** (Youth Hostel, Oberwesel)

Thursday March 20th

- 08:30 - 08:45 **Registration**
- 08:50 - 09:00 **Welcome and introductory remarks**
- 09:00 - 10:40 **Magnetic nanostructures**
Chair: L. Péter
- 09:00 - 09:20 **Preparation, structure and giant magnetoresistance of electrodeposited Fe-Co/Cu multilayers**
B.G. Tóth, L. Péter, I. Bakonyi
- 09:20 - 09:40 **Magneto-thermopower and giant magnetoresistance measurements on single multilayered Co-Ni/Cu nanowires**
A. Niemann, T. Böhnert, A.-K. Michel, S. Bäßler, J. Gooth, K. Neuróhr, B. Tóth, L. Péter, I. Bakonyi, V. Vega, V.M. Prida, K. Nielsch
- 09:40 - 10:00 **Electrochemical deposition of CoNi alloy nanowires and multisegmented stacks in hard-anodic alumina templates**
V.M. Prida, V. Vega, J. García, L. Iglesias, B. Hernando, C. Luna, D. Görlitz, K. Nielsch
- 10:00 - 10:20 **Electrodeposition of Fe₅₀Pd₅₀ nanowires and their characterization**
D. Pečko, K.Ž. Rožman, N. Kostevšek, S. Kobe
- 10:20 - 10:40 **Influence of electrodeposition conditions on the composition and surface magnetization processes of Fe-Ga magnetostrictive nanowires**
N. Lupu, A. Pintea, M. Lostun, H. Chiriac
- 10:40 - 11:20 **Coffee break**

- 11:20 - 12:40** **Micro- and nanostructure formation**
Chair: S. Roy
- 11:20 - 11:40** **Tuning the nanostructures architecture and composition using template assisted electrodeposition**
C.T. Sousa, M.P. Proença, J. Azevedo, M. Susano, S. Moraes
J. Ventura, J.P. Araújo
- 11:40 - 12:00** **Nanocrystalline nickel micro-structures for thermal micro-actuators**
W.E.G. Hansal, H. Steiner, R. Mann, M. Halmdienst, J. Schalko, F. Keplinger, P. Svasek
- 12:00 - 12:20** **Relationships between microstructure and contamination in nanocrystalline Ni-based coatings**
N. Shakibi-Nia, J. Creus, X. Feaugas, A. Godon, C. Savall
- 12:20 - 12:40** **Electrodeposition of bismuth thin films on n-GaAs**
A. Prados, R. Ranchal, L. Pérez
- 12:40 - 14:40** **Lunch**
- 14:40 - 15:40** **Semiconductor thin films and nanowires**
Chair: J.P. Araújo
- 14:40 - 15:00** **Electrodeposited cuprous oxide as a promising solar water splitting photocathode**
J. Azevedo, S.D. Tilley, P. Dias, M. Stefikc, M. Graetzel, C.T. Sousa, J.P. Araújo, A.M. Mendes
- 15:00 - 15:20** **Journal of visualized experiments: Nanowire synthesis and photocatalytic H₂ formation**
A.W. Maijenburg, E.J.B. Rodijk, M.G. Maas, J.E. ten Elshof
- 15:20 - 15:40** **Electrochemical deposition of ZnO nanostructures with controlled geometry in etched ion-track membranes**
L. Movsesyan, I. Alber, C. Trautmann, M.E. Toimil-Molares
- 15:40 - 16:10** **Coffee break**
- 16:10 - 17:10** **Electrodeposition in non-aqueous media**
Chair: A. Vaskevich
- 16:10 - 16:30** **Electrodeposition of Si and Ge nanowires (NWs) and nanotubes (NTs) using room temperature ionic liquid**
J. Mallet, K. Namur, F. Martineau, M. Troyon, M. Molinari

- 16:30 - 16:50** **Non-aqueous electrodeposition of Ni and Fe-Ni alloys**
K. Neuróhr, L. Pogány, B. Tóth, Á. Révész, I. Bakonyi, L. Péter
- 16:50 - 17:10** **Electrochemical copper deposition from an ethaline-CuCl₂·2H₂O DES**
S. Roy, S. Ghosh
- 17:15 - 19:15** **Poster session and drinks (Seminarraum I)**
- 19:45** **Bus transfer to conference dinner**

Friday, March 21st

09:00 - 10:40

Alloys
Chair: W. Schwarzacher

09:00 - 09:20

Electrodeposition of Au, AuAgCu, and AuAgCuNi plasmonic materials from non-cyanide solutions
E.C. Estrine, B.J.H. Stadler, I. Tabakovic

09:20 - 09:40

Synthesis of AuAg nanowires for plasmonic applications
I. Alber, L. Burr, C. Trautmann, M.E. Toimil-Molaes

09:40 - 10:00

Electrodeposition of supersaturated CuAg alloys
R. Bernasconi, L. Nobili, L. Magagnin

10:00 - 10:20

Self-organization phenomena during electrodeposition of alloys
Ts. Dobrovolska

10:20 - 10:40

Nucleation study of electrodeposited Cu, Bi and CuBi alloys in applied magnetic gradient fields
F. Karnbach, M. Uhlemann, K. Tschulik, A. Gebert

10:40 - 11:20

Coffee break

11:20 - 12:40

Nanotubes and templates
Chair: K. Nielsch

11:20 - 11:40

Modelling and optimization of TiO₂ nanotubes for dye-sensitized solar cells (DSCs)
P. Quitério, A.Apolinário, C.T. Sousa, J. Ventura, J.D. Costa, A.M. Mendes, J.P. Araújo

11:40 - 12:00

Highly-ordered TiO₂ nanotube arrays by laser interference lithography-guided anodization
V. Vega, J. García, V. M. Prida, W. Rahimi, M. Waleczek, C. Bae, J.M. Montero-Moreno, K. Nielsch

12:00 - 12:20

Self-ordered, high aspect ratio and highly ordered sub-15 nm porous alumina templates
C.V. Manzano, J. Martín, M.S. Martín-González

12:20 - 12:40

Advanced metal nanomaterials obtained by refined electroless plating
F. Münch, W. Ensinger

12:40 - 14:40

Lunch

- 14:40 - 15:40** **Thermoelectric nanostructures**
Chair: W. Hansal
- 14:40 - 15:00** **Electrodeposition of thermoelectric Bi_2Te_3 and $(\text{Bi}_{1-x}\text{Sb}_x)_2\text{Te}_3$ nanowires**
N. Stein, J. Schoenleber, C. Boulanger
- 15:00 - 15:20** **Electrochemical optimization of CoSb_3 films in DMSO**
M. Rull Bravo, M. Muñoz Rojo, A. Jacquot, A.M. López Martínez, J.F. Fernández Lozano, M. Martín González
- 15:20 - 15:40** **Thermoelectric power factor of ternary single-crystalline Sb_2Te_3 - and Bi_2Te_3 -based nanowires**
S. Bäbler, T. Böhnert, J. Gooth, C. Schumacher, E. Pippel, K. Nielsch
- 15:40 - 16:20** **Coffee break**
- 16:20 - 17:40** **Electrochemical applications**
Chair: M. Uhlemann
- 16:20 - 16:40** **Electrochemical gating of single molecule junctions using Ni electrodes**
R. Brooke, D. Szumski, W. Schwarzacher
- 16:40 - 17:00** **Electrochemical sizing of individual Fe_3O_4 nanoparticles by anodic and cathodic particle coulometry**
K. Tschulik, R.G. Compton
- 17:00 - 17:20** **Formation of metal adlayers in ensemble of immobilized nanoparticles**
A. Vaskevich, A.B. Tesler, T.B. Bendikov, L. Chuntunov
- 17:20 - 17:40** **Capacitive properties of electrodeposited cobalt hydroxide in alkaline solution**
F.S. Fedorov, J. Linnemann, K. Tschulik, M. Uhlemann, A. Gebert
- 18:00** **Final discussion**
- 19:00** **Dinner (Youth Hostel, Oberwesel)**

Saturday, March 22nd

7:00 a.m.-8:30 breakfast

8:30 a.m. Excursion!



"The Lorelei Rock" painted in August 1817 by William Turner



***Oberwesel is aptly termed the "Town of Towers and Wine"**
Böttcher Christian Eduard, "Setting out for the grape harvest,
Oberwesel-on-Rhine", 1867*



*...Men are said to succumb to her spell,
just by casting a glance her way...*

Posters: Thursday, March 20th

1. Electrodeposition of silver-tin alloys

A. Gyzova, I. Krastev, L. Petkov, Ts. Dobrovolska

2. Electrochemical synthesis of iron oxide nanowires

B. Cortés, A. Prados, A. Llavona, L. Perez

3. Electrochemically deposited magnetostrictive FeGa (Galfenol) thin films and nanowires

E.C. Estrine, M. Hein, B.J. H. Stadler

4. Tailoring electroless plating characteristics for successful nanotube fabrication

F. Muench, W. Ensinger

5. Influence of magnetic gradient fields on the electrodeposition of Co, Fe and CoFe

F. Karnbach, K. Tschulik, A. Gebert, J. Eckert, M. Uhlemann

6. Investigation of the dealloying process of electrodeposited silver-gold nanowires

L. Burr, I. Alber, W. Sigle, C. Trautmann, M.E. Toimil-Molares

7. Electrodeposition of palladium – indium alloys

M. Georgiev, I. Krastev and Ts. Dobrovolska

8. Surface modification of etched ion-track templates by atomic layer deposition of SiO₂, Al₂O₃ and TiO₂

A. Spende, I. Alber, N. Sobel, C. Hess, M. Lukas, B. Stühn, J. M. Montero Moreno, R. Zierold, K. Nielsch, C. Trautmann, M.E. Toimil-Molares

9. Graphene-based electrodes for supercapacitors

D. Perego, S. Franz, M. Bestetti

10. Improving methanol oxidation activity of metal nanotubes by exchange and dealloying chemistry

S. Schäfer, F. Münch, W. Ensinger

11. Development of Pt bimetallic electrocatalysts using electrochemical methods

Z. Al Amri, N. Vasiljevic

12. Magnetic anisotropy in electrodeposited Ni-Co-Fe ternary alloy nanostructures-towards applications for high density information storage

J. Shirtcliffe, N. Fox, W. Schwarzacher

13. Anodic iron oxide nanotubes: Structural and magnetic characterization

A. Apolinário, C.T. Sousa, A.M.Pereira, M.P.Fernandez, J. Azevedo, J.M. Teixeira, J. Ventura, L. Andrade, A.M. Mendes, J. P Araújo

14. Magnetic-lipid nanoparticles using electrodeposited nanowires

M. Susano, S. Moraes, C.T. Sousa, M.P. Proença, J.P. Araújo

15. Electrodeposition, structural analysis and magnetic properties of Co-Bi multilayers

K. Berkesi, L. Péter, I. Bakonyi

16. Near-substrate composition depth profile of d.c.-plated and pulse-plated Fe-Ni alloys

K. Neuróhr, K. Vad, A. Csik, G. Molnár, I. Bakonyi, L. Péter

17. Photoelectrodeposition of conducting polymers onto inorganic semiconductor nanoarchitectures

G.F. Samu, C. Visy, K. Rajeshwar, C. Janáky

18. Electrodeposition of Bi₂Te₃ nanomaterials for thermoelectric generators

M. Rosmaninho, M. Proença, C.T. Sousa, J. Ventura, J.P. Araújo, A.M. Pereira

19. Bi₂Te₃ nanowires electrodeposited in etched ion-track templates: Structural characterization and magneto-transport measurements

J. Krieg, F. Lacovella, L. Burr, M.E. Toimil-Molares, W. Escoffier

20. Electrodeposition of amorphous NiP alloys for application in neutron beam guides

L. Péter, K. Berkesi, B. Lázár, Z. Horváth, L. Ludányi, L. Rosta

21. Impedancemetry as a tool to investigate the variation of electrical properties in gas-sensor tin dioxide nanowire mats

F.S. Fedorov, I. Kiselev, A.S. Varezchnikov, A.V. Lashkov, V.Yu. Musatov, V.V. Sysoev

22. Magnetic anisotropy in electrodeposited CoCu nanowire arrays

J. García, V.Vega, V.M. Prida, B. Hernando, C. Luna, J. Escrig, M. Vázquez

23. Photoactive titanium dioxide layers obtained by low temperature plasma electrolytic oxidation

S. Franz, D. Perego, O. Marchese, M. Bestetti

24. Influence of electrodeposition conditions on the morphology and magnetic properties of CoFeB/Sn multilayered nanowires

H. Chiriac, A. Pinteá, G. Stoian, M. Grigoras, N. Lupu

25. Electrodeposited zinc-ceria nanocomposite coatings: TEM-scale characterisation and properties evaluation

L. Exbrayat, E. Calvié, C. Rébére, C. Berziou, C. Savall, T. Douillard, G. Marcos, P. Steyer, J. Creus

26. Characterization of Bi_{1-x}Sb_x nanowires fabricated by electrodeposition

M. Cassinelli, W. Sigle, C. Trautmann, M.E. Toimil-Molares

27. The Electrochemistry Behind the Deposition of Metallic Nanowire Arrays in Thin Pores

M. Graf, A. Eychmüller

