

EDNANO 8

8th INTERNATIONAL WORKSHOP ON ELECTRODEPOSITED NANOSTRUCTURES

17th-19th March 2011, Milan, Italy

Organizers: Luca Magagnin, Paula Cojocaru and Giovanni Zangari



 **PANATRONIX**

LA SCIENZA DEGLI ULTRASUONI AL LAVORO
NELLA PREPARAZIONE DELLE SUPERFICI

Alcuni Settori di Applicazione

-  Nichelatura
-  Cromatura
-  Argentatura e Doratura
-  Fosfatazione
-  Zincatura
-  Ossidazione Anodica
-  Verniciatura per cataforesi
-  Impianti di lavaggio



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EU funding and grants - project management



THURSDAY MARCH 17TH, 2011

**Meeting room Hotel Lombardia
Viale Lombardia 76 – Milano**

Thursday March 17th, 2011

- 8.30 Registration**
- 9.00 Meeting opening**
L. Magagnin, G. Zangari, P. Cojocar
- Plenary Session 1 - Chair: L. Peter**
- 9.10 Keynote:** Electrochemical fabrication of arrayed magnetic nanostructures for bit patterned media
T. Homma, T. Ouchi, T. Kuno, Y. Konishi, N. Shimano
- 9.35** Direct patterned aluminum surfaces by laser interference lithography and role in pore nucleation during first stages anodization
J.M. Montero-Moreno, S. Martens, M. Waleczek, D. Gorlitz, K. Nielsch
- 9.55** Influence of electrodeposition parameters on the structure and morphology of Ni nanowires
A. Mitrokotsa, S. Spanou, P. Gyftou, E.A. Pavlatou
- 10.15** Electrochemical deposition of nickel nanowires and nanotubes inside self-assembled pores of anodic alumina templates
M.P. Proenca, C.T. Sousa, D. Leitao, J. Ventura, M. Vazquez, J.P. Araujo
- 10.35** Coffe break
- Plenary Session 2 - Chair: W. Schwarzacher**
- 11.00 Keynote:** Thermoelectric Thin Films and Nanowires: From Electrochemical Synthesis towards Model Systems
K. Nielsch
- 11.25** Electrodeposition of single-crystal Co nanowires with large magnetocrystalline anisotropy: magnetic properties and structural investigation
L. Cattaneo, S. Franz, F. Albertini, P. Ranzieri, A. Vincenzo, M. Bestetti, E. Snoeck
- 11.45** Co-Ni nanowires by electrochemical deposition in hard-anodized nanoporous alumina templates
V. Vega, T. Bohnert, S. Martens, M. Waleczek, L. Akinsinde, J.M. Montero-Moreno, D. Gorlitz, V.M. Prida, K. Nielsch
- 12.05** Electrodeposition of MOM nanowire heterostructures for ReRam applications
D. Perego, S. Bonelli, L. Cattaneo, S. Franz, M. Bestetti, G. Tallarida, C. Wiemer, S. Spiga
- 12.25** Fe-Pd-based nanotubes for drug delivery and other applications
K. Zuzek Rozman, D. Pecko, U. Maver, P. Nadrah, M. Bele, S. Kobe
- 12.45** Lunch buffet
- Plenary Session 3 - Chair: S. Roy**
- 14.30 Keynote:** Virus/metal (oxide) hybrids
A.M. Bittner, S. Shah, A.A. Khan, T. de Oliveira, A. Chuvilin
- 14.55** Synthesis of α -Fe₂O₃ nanowires by pulsed electrodeposition of Fe in alumina templates
J. Azevedo, C.T. Sousa, J.D. Costa, A. Apolinario, J. Ventura, H.A. Ribeiro, A.M. Mendes, J.P. Araujo

- 15.15** Nanowires by template synthesis: thermoelectric nanocomposites for industrial devices
L. Gravier, K. Apaydin, T. Francfort
- 15.35** Electrodeposition of thermoelectric bismuth compound nanowires in templates
M.E. Toimil-Molares, O. Picht, S. Muller, C. Schotz, R. Neumann
- 15.55** Coffe break
Plenary Session 4 - Chair: P. Cojocaru
- 16.20** Photocatalytic nanowires for hydrogen production and water splitting
A.W. Maijenburg, M.G. Maas, E.J.B. Rodijk, J. Veerbeek, R. de Putter, D.H.A. Blank, J.E. ten Elshof
- 16.40** Structured electrodeposition of magnetic layers in high magnetic gradient fields
F. Karnbach, K. Tschulik, M. Uhlemenann, A. Genert, L. Schultz
- 17.00** Surface roughness and magnetoresistance study of ultrathin electrodeposited Co/Cu multilayers
B.G. Toth, L. Peter, I. Bakonyi
- 17.20** Relationship of Fe²⁺ concentrations in solution, current efficiency and stress in electrodeposited CoFe films
I. Tabakovic, S. Riemer, N. Jayaraju, V. Venkatasamy, J. Gong
- 17.40** End of first day meeting
- 20.00** Conference dinner

FRIDAY MARCH 18TH, 2011

**Room MA1
Politecnico di Milano
Dip. Chimica, Materiali e Ing. Chimica
Via Mancinelli, 7**

Friday March 18th, 2011

- 9.00 Meeting opening and greetings by Prof. R. Rota**
L. Magagnin
- Plenary Session 5 - Chair: L. Magagnin**
- 9.10 Keynote:** Self-organized TiO₂ nanotubes: structure and formation of polymer composites
D. Kowalski, P. Schmuki
- 9.35** Growth control of TiO₂ nanotubes for dye-sensitized solar cell
J.D. Costa, A. Apolinario, J. Azevedo, C.T. Sousa, J. Ventura, H.A. Ribeiro, A.M. Mendes, J.P. Araujo
- 9.55** Localized surface plasmon resonance (LSPR) spectroscopy as a tool for studying metal deposition on the nanoscale
A. Vaskevich, M.D. Susman, L. Chuntunov, A. Tesler, G. Haran, I. Rubinstein
- 10.15** Electrodeposition of free-standing Cu structures in superimposed magnetic gradient fields
K. Tschulik, M. Uhlemann, A. Gebert, L. Schultz
- 10.35** Coffee break
- Plenary Session 6 - Chair: W. Hansal**
- 11.00** Electrophoretic deposition of multiwalled carbon nanotubes and nanosized SiC particles
K. Konig, S. Novak, A.R. Boccaccini, S. Kobe
- 11.20** Synthesis and mechanical properties of nano-nickel and nano-Ni/Al₂O₃ coated hybrid metal foams by electrodeposition
A. Jung, M. Weinmann, H. Natter, S. Diebels, M.R. Koblischka, E. Lach, R. Hempelmann
- 11.40** Electro-Co-Deposition of nano-bio-ceramics to obtain composite layers
L. Benea, P. Ponthiaux, F. Wenger
- 12.00** Effect of electrochemical structuring Ti alloys in methanol-sulphuric acid solutions and its influence on osteoblast behaviour
S. Roy, S. Johnson Lynn, M. Birch, A. McCaskie
- 12.20** Some aspects of nucleation processes during template electrodeposition
F. Brinza, C-C. Hriban
- 12.40** Lunch buffet
- Plenary Session 7 - Chair: I. Bakonyi**
- 14.30 Keynote:** Electrokinetics and deposit nanostructure
P.L. Cavallotti
- 14.55** Kinetic Monte Carlo simulations of the electrodeposition of Co
A. de Carvalho Frank, W. Scwarzacher, P.T. An Sumodjo
- 15.15** Growth of Pt films on Au(111) via surface limited redox replacement (SLRR)
J. Nutariya, D. Bertrand, N. Vasiljevic, M. Fayette, Y. Liu, N. Dimitrov
- 15.35** Measurement of near-substrate composition changes of electrodeposited alloys at the nanometer scale
L. Peter, K. Neurohr, A. Csik, K. Vad, G. Molnar
- 15.55** Coffee break

Plenary Session 8 - Chair: M. Uhlemann

- 16.20** Electrodeposition of hierarchical nanostructured coatings as facile route for fabrication of superhydrophobic surfaces
L. Magagnin, P. Cojocaru, S. Torabi Tabatabaei, B. Demir, A. Ghadirzadeh, M. Wu, M. Sansotera, W. Navarrini
- 16.40** Electrochemical pulse deposition of nano-crystalline silver-tin alloys
W.E.G. Hansal, S. Hansal, G. Menager, A. Darchen
- 17.00** Electroplating of stainless steel: from micro to nanocomponents synthesis
L. Philippe, J. Michler
- 17.20** Impact of buffer layer on the electrochemical growth of FeGa films
D. Iselt, U. Gaitzsch, S. Oswald, J. Koza, K. Tschulik, M. Uhlemann, S. Fahler, L. Schultz, H. Schlorb
- 17.40** Nanocoat
P. Negre
- 18.00** End of second day meeting

POSTER SESSION

THURSDAY MARCH 17TH, 2011

**Meeting room Hotel Lombardia
Viale Lombardia 76 – Milano**

POSTER - Thursday March 17th, 2011

- 1 **Tuning the composition and magnetism of permalloy nanowires by pulsed plating**
M.S. Salem, R. Zierold, J.M.M. Moreno, D. Gorlitz, K. Nielsch
- 2 **Pulsed electrodeposition stages and growth mechanism of metal nanowires in nanoporous alumina templates**

C.T. Sousa, D.C. Leitao, A. Apolinario, M.P. Proenca, A.M. Pereira, J. Ventura, J.P. Araujo
- 3 **Thermal stability of nanocrystalline CoP alloy**
I. Kosta, A. Vincenzo, M. Sarret, C. Muller
- 4 **Electrophoretic deposition of organic-inorganic nanocomposites**
Katja Konig
- 5 **ZnO AND TiO₂ NANOPARTICLES USED TO IMPROVE THE POLYMERIC NANOFILTRATION MEMBRANES**
S. BALTA, L. BENEÀ, B. Van der BRUGGEN
- 6 **Morphology-Controlled Segmented All-Platinum Nanowires by Template Electrodeposition**
M. Raubera, J. Brötz, I. Alber, S. Müller, O. Picht, M. E. Toimil-Molares, W. Ensinger
- 7 **Nanopatterning by soft lithography in combination with electrodeposition**
A George, A. W. Majjenburg, D. H. A. Blank and J. E. ten Elshof
- 8 **Synthesis of Segmented Au/Ag/Au Nanostructures and Nanogaps**
I. Alber, S. Müller, O. Picht, M. Rauber, R. Neumann, M.E. Toimil-Molares
- 9 **Computer simulation of the electrodeposition of magnetic alloys and multilayer films**
S. E. Ward Jones and W. Schwarzacher
- 10 **Corrosion behaviour of Zn-TiO₂ nanocomposite coatings**
C.C. Lalau, A. Ispas, A. Bund, G. Carac, C. Gheorghies
- 11 **Expedite method to measure electrical transport properties in AAO embedded nanowires grown by electrodeposition**

D. C. Leitao, C. T. Sousa, J. Ventura, A. M. Pereira, J. B. Sousa, M. Vazquez, J. P. Araujo
- 12 **Co and Co-alloy nanowires electrodeposited within nanoporous templates**
Christine Mickel, Heike Schlörb, Margitta Uhlemann
- 13 **Codeposition of Co and Pb by d.c. and pulse plating and magnetoresistance properties of the deposits**
K. Neuróhr, J. Dégi, L. Pogány, I. Bakonyi, L. Péter
- 14 **Electrodeposition of Fe-Pd based thin films and nanowires**
D. Pecko, K.Ž. Rožman, Z. Samardžija, B. Pihlar, S. Kobe
- 15 **Electrodeposition of Nickel Cobalt /Bariumferite Multilayers Nanowires using Alumina Template**
Cojocar P., Magagnin L., Cosor (Rusu) D. E., Cârâc G.
- 16 **Electrodeposited Fe₇₀Pd₃₀ nanowires for magnetic shape memory applications**
V. Hähnel, S. Fähler, L. Schultz, H. Schlörb
- 17 **Characterization of Bismuth Compound Nanowires for Thermoelectrics**
S. Müller, C. Schötz, O. Picht, W. Sigle, M. Rauber, I. Alber, R. Neumann, M. E. Toimil-Molares
- 18 **Nanocrystalline Nickel and n-Ni/n-Al₂O₃ metal matrix composites for galvanofarming**
M. Weinmann, A. Jung, H. Natter, R. Hempelmann
- 19 **Electrochemical and microstructure studies of nanotubular titanium oxide formation**
A. Mazzarolo, A. Vincenzo, M. Bestetti
- 20 **Thermal fragmentation of gold nanowires in AAO templates**
L. Cattaneo, A. Vincenzo, S. Franz, M.F. Brunella, M. Fumagalli, M. Bestetti, E. Villa

- 21 **A Study of Photogalvanic Cells with Different Types of Anodically Formed TiO₂ Nanotube Arrays**
E. Roduner, M. Bestetti, G. Küzeci
- 22 **Electrophotocatalytic decolorization of azo dyes on self-organized TiO₂ nanotubes in a laboratory scale reactor**
A. Turolla, M. Antonelli, M. Bestetti
- 23 **ELECTROCHEMICAL SYNTHESIS OF NANOSTRUCTURED GOLD FOR SUPERHYDROPHOBICITY AND BIO APPLICATIONS**
S. Torabi tabatabaei, B. Demir, M. Wu, M. Sansotera, W. Navarrini, L. Magagnin
- 24 **ELECTRODEPOSITION OF Ni-rich Ni-Cu alloy for OPTICAL MIRRORS**
P. Cojocar, L. Magagnin, E. Gomez, E. Valles
- 25 **Palladium plating on titanium for fuel cell electrodes**
A. Raygani, L. Magagnin
- 26 **Electrochemical charging of FePt/iron oxide composite films**
K. Leistner, N. Lange, S. Fähler, H. Schlörb, L. Schultz
- 27 **Wettability controlled microvalve: contactless microvalve actuation with UV/d a application**
Ali Gökhan Demir, Barbara Previtali, Massimiliano Bestetti
- 28 **Composition profile in electrodeposited NiFe nanowires**
A. Llavona, A. Prados, V. de Manuel, M. C. Sánchez and L. Pérez