

Curriculum Vitae

Thierry Djenizian

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Main research interest

Materials science, microstructures, surface/interface, thin film characterization, electron beam lithography, nano-patterning, electrochemistry, semi-conductor chemistry.

Education

- 1998-2002 PhD in Materials Science
At Swiss Federal Institute of Technology Lausanne, EPFL (Switzerland) and at the University of Erlangen-Nuremberg (Germany)
- 1997-1998 Diploma thesis in Materials Science, at Swiss Federal Institute of Technology Lausanne, EPFL (Switzerland)
- 1994-1997 M. Sc. in Physical chemistry option Materials Science, University of Marseille (France)
- 1993-1994 B. Sc. in Physics and Chemistry, University of Marseille (France)
- 1991-1992 Maturity Certificate in Science, Institute J. Monnet, Vitrolles (France)

Scientific experience

- 09/1998-07/2002 PhD of materials science at Materials Science Department of the Swiss Federal Institute of Technology Lausanne (CH) and at the Chair for Surface Science and Corrosion at the University of Erlangen-Nuremberg (D).
Subject: "Electron beam induced carbon deposit used as mask for selective electrochemical reactions onto semi-conductive electrodes."
Methods: Scanning Electron microscopy (observation and patterning of surfaces), Electrodeposition, capacitance measurements, micro-electrochemistry, Ellipsometry, AES and XPS, AFM and photolithography.
- 06/2001-07/2002 Collaboration with the Institute of Microstructural Sciences (IMS) of the National Research Council of Canada (NRC-Ottawa)
Subject: formation and properties of anodic oxide grown on InP
- 02/1998-06/1998 Diploma thesis Materials Science Department of the Swiss Federal Institute of Technology Lausanne (EPFL), Physical Metallurgy Laboratory, Lausanne (CH).
Subject: "Electromagnetic plasma enhanced diamond-like carbon deposition"
Keywords: Thin film, micro-Raman spectroscopy, SEM, IR spectroscopy.
- 1996-1997 Semester project in the Center of thermodynamic and calorimetry, CNRS, Marseille.
Subject: "Formation and characterization of porous aluminum oxide".

Training course in industry during 6 weeks at SNMI in Avignon (France).
Subject: Optimization of sputtered zirconium oxide deposition for nuclear applications

Teaching experience

- 01/1999-07/2000 (EPFL) Lab. Courses for undergraduate students in Materials Science.
- Lithography and fabrication of MOS transistor.
 - Characterization of MOS transistor.
- 09/2000-07/2001 (Uni-Erlangen) Lab. Courses for undergraduate students in Materials Science.
- Corrosion of materials.
- 09/2000-12/2000 Tutoring for thermodynamics lecture, undergraduate students.
- 01/2001-04/2001 Tutoring for electrochemistry lecture, undergraduate students.

Research Tutoring

- Diploma thesis
- L. Achour, "E-beam induced masking for metallic nanostructures formation .
 - K. Khairoun, " E-beam induced masking for selective pore formation on silicon surface".
 - B. Petite, "Selective electrodeposition of CdS at semi-conductive electrodes".
 - C. Blachon, "E-beam induced carbon deposition for selective electrodeposition of Cu at semi-conductive electrodes".
- Semester projects
- K. Belghiti, " E-beam induced carbon nanomasking for nanostructures formation on metal ".
 - D. Favez, " E-beam induced carbon nanomasking on silicon surface .
 - C. Barraud, " Nano-patterning by selective electrochemical deposition of CdSe onto AFM modified silicon surfaces .
 - P. Beaud, " AFM induced nano-patterning of Si surfaces .

Research activities

- Main subject *Methods:* SEM lithography (observation, patterning of surfaces), selective electrodeposition of various metals, polymers and semiconductors on semiconductive and metallic surfaces. Selective pore formation on silicon surface.
- Other subjects
- Pore formation and oxidation of InP, electrical characterization.
 - Nano-patterning by selective electrochemical deposition onto AFM modified silicon surfaces.

Oral presentations

- 2000 T. Djenizian, L. Santinacci and P. Schmuki,
Localized Electrochemical Deposition of Au into E-beam patterns , in 2nd International Symposium on Pits and Pores: Properties and Significance for Advanced Materials, 198th Meeting of the Electrochem. Soc., Phoenix, October 2000.
- L. Santinacci, T. Djenizian and P. Schmuki
AFM induced nanopatterning of Si surfaces , in 2nd International Symposium on Pits and Pores: Properties and Significance for Advanced Materials, 198th Meeting of the Electrochem. Soc., Phoenix, October 2000.

P. Schmuki, L. Santinacci, T. Djenizian and D. J. Lockwood
"Pore formation on InP and GaAs", in *2nd international Conference on Porous Semiconductor Science and Technology*, Madrid, march 2000.

P. Schmuki, L. Santinacci, T. Djenizian and D.J. Lockwood
Formation and properties of porous InP , in *2nd International Symposium on Pits and Pores: Properties and Significance for Advanced Materials*, 198th Meeting of the Electrochem. Soc., Phoenix, October 2000.

D.J. Lockwood, L. Santinacci, T. Djenizian and P. Schmuki
"Optical properties of InP", in *2nd International Symposium on Pits and Pores: Properties and Significance for Advanced Materials*, 198th Meeting of the Electrochem. Soc., Phoenix, October 2000.

2001 T. Djenizian, L. Achour, L. Santinacci and P. Schmuki
"Electron-Beam Induced Carbon Nano-masking for Selective Electrodeposition of Metals on Si(100)", in *Electrochemical Deposition and Dissolution*, Joint International Meeting: 200th ECS meeting and the 52nd ISE meeting, San Francisco, September 2001.

T. Djenizian, L. Santinacci and P. Schmuki
"Electron Beam Induced Carbon Masking for Selective Porous Silicon formation" in *6th International symposium on the physics and chemistry of luminescent materials*, Joint International Meeting: 200th ECS and the 52nd ISE, San Francisco, September 2001.

T. Djenizian, B. Petite, L. Santinacci and P. Schmuki
"Electron-Beam Induced Carbon Patterns Used as Mask for the Cadmium Sulfide Deposition on Si(100)" in *Semiconductor- and Photo-Electrochemistry*, Joint International Meeting: 200th ECS meeting and the 52nd ISE meeting, San Francisco, September 2001.

L. Santinacci, T. Djenizian and P. Schmuki
"AFM Induced Nanoscale Electrochemical Deposition of Metals on Si (100) Surfaces", in *Electrochemical Deposition and Dissolution*, Joint International Meeting: 200th ECS meeting and the 52nd ISE meeting, San Francisco, September 2001.

L. Santinacci, T. Djenizian and P. Schmuki
"Selective Pd Electrochemical Deposition on Si (100) Surfaces Assisted by AFM", in *Interfacial Structure, Kinetics, and Electrocatalysis*, Joint International Meeting: 200th ECS meeting and the 52nd ISE meeting, San Francisco, September 2001.

L. Santinacci, T. Djenizian and P. Schmuki
"A Novel Semiconductor Nano-Patterning Approach Using AFM-Scratching Through Thin Oxide Layers " in *Semiconductor- and Photo-Electrochemistry*, Joint International Meeting: 200th ECS meeting and the 52nd ISE meeting, San Francisco, September 2001.

Publications in proceeding volumes

- 2000 T. Djenizian, L. Santinacci and P. Schmuki
E-beam induced nano-masking for metal electrodeposition on semiconductor surfaces in *2nd International Symposium on Pits and Pores: Properties and Significance for Advanced Materials*, P. Schmuki, Editor, PV 2000-25, p. 200, The Electrochemical Society Proceedings Series, Pennington, NJ (2001).
- L. Santinacci, T. Djenizian and P. Schmuki
AFM induced nano-patterning of Si surfaces in *2nd International Symposium on Pits and Pores: Properties and Significance for Advanced Materials*, P. Schmuki, Editor, PV 2000-25, p. 189, The Electrochemical Society Proceedings Series, Pennington, NJ (2001).
- P. Schmuki, L. Santinacci, T. Djenizian and D.J. Lockwood
Formation and properties of porous InP in *2nd International Symposium on Pits and Pores: Properties and Significance for Advanced Materials*, P. Schmuki, Editor, PV 2000-25, p. 554, The Electrochemical Society Proceedings Series, Pennington, NJ (2001).
- D.J. Lockwood, L. Santinacci, T. Djenizian and P. Schmuki
"Optical properties of InP" in *2nd International Symposium on Pits and Pores: Properties and Significance for Advanced Materials*, P. Schmuki, Editor, PV 2000-25, p. 567, The Electrochemical Society Proceedings Series, Pennington, NJ (2001).
- 2001 T. Djenizian, L. Santinacci and P. Schmuki
"Electron beam induced carbon masking for selective porous silicon formation" in *6th International symposium on the physics and chemistry of luminescent materials*, M. Cahay, Editor, PV 2001, The Electrochemical Society Proceedings Series, Pennington, NJ (2001).

Publications in reviewed scientific journals

- 2000 P. Schmuki, L. Santinacci, T. Djenizian and D.J. Lockwood
"Pore formation on n-InP", *Phys. Stat. Sol. A*, **182**, 51 (2000).
- 2001 T. Djenizian, L. Santinacci, P. Schmuki
Electron-beam induced nanomasking for metal electrodeposition on semiconductor surfaces, *J. Electrochem. Soc.*, **148**, 197(2001).
- T. Djenizian, L. Santinacci and P. Schmuki
Electron beam-induced carbon masking for electrodeposition on semiconductor surfaces, *Appl. Phys. Lett.*, **78**, 2940 (2001).
- L. Santinacci, T. Djenizian and P. Schmuki
"AFM induced nano-patterning of Si surfaces", *J. Electrochem. Soc.*, **148**, 640 (2001).
- L. Santinacci, T. Djenizian and P. Schmuki
"Nanoscale patterning of Si(100) surfaces by scratching through the native oxide layer using atomic force microscope", *Appl. Phys Lett.*, **79**, 1882(2001).
- T. Djenizian, B. Petite, L. Santinacci and P. Schmuki
"Electron-beam induced carbon deposition used as mask for cadmium sulfide deposition", *Electrochim. Acta*, (2001), in press.

T. Djenizian, G. I. Sproule, S. Meisa, D. Landheer, X. Wu, L. Santinacci, P. Schmuki and M. J. Graham
"Composition and growth of thin anodic oxides formed on InP (100)", Electrochim. Acta, submitted.

T. Djenizian, L. Santinacci and P. Schmuki
Electron Beam Induced Carbon Deposition Used as a Negative Resist for Selective Porous Silicon Formation, J. Electrochem. Soc., (2001), submitted.

T. Djenizian, L. Achour, L. Santinacci, H. Hildebrand and P. Schmuki,
"Electron-beam induced carbon mask effect for electrochemical reactions, nanostructures fabrication", Electrochim. Acta, (2001), submitted.

L. Santinacci, T. Djenizian, H. Hildebrand, S. Ecoffey, H. Mokdad, T. Campanella, and P. Schmuki
"Selective palladium electrochemical deposition on silicon (100) surfaces by AFM oxide scratching", Electrochim. Acta, submitted.

Publication of more general nature

2001 | Report from the scientific on-line journal "Inside R&D Alert" about sub-100-nm technology for device fabrication
T. Djenizian, L. Santinacci, P. Schmuki
Sub-100-nm mask is repairable, Frost & Sullivan, New York, June 8 (2001).

Languages: French (mother tongue). English and german.