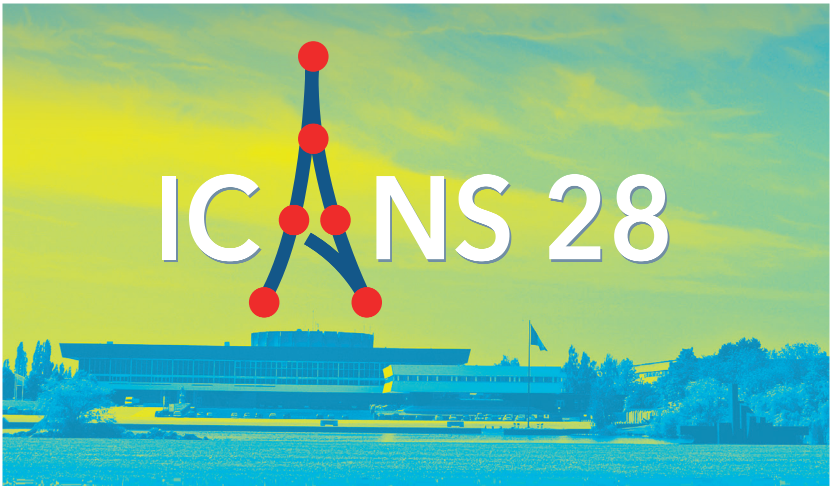

ICANS 28

28th International conference on Amorphous and Nanocrystalline Semiconductors

4-9 August 2019

École polytechnique - Palaiseau - France

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4 - 9 August 2019 Ecole Polytechnique, Palaiseau, France
Conference Detailed Programme

Monday, 5 August 2019

18:20-20:20 Poster Session

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Effect of Sn ion implantation on the structural and optical properties of amorphous Ge2Sb2Te5 thin films — **Mo.Mat.P1**
P. Lazarenko, S. Kozyukhin, B. Eszter, A. Sitnikov, V. Glukhenkaya, F. Tamás, D. Seleznev, E. Kirilenko, A. Dedkova, A. Sherchenkov

Charge Exchange at Valence Alternation Pairs in Amorphous Selenium During Transient Optical Excitation and Photocurrent Decay — **Mo.Mat.P2**
J. Jacobs, S. Kasap, G. Belev, R. J. Curry

Optical properties of amorphous film composites TiO2<Ag>and C-TiO2<Ag> — **Mo.Mat.P3**
Y. Mukhametkarimov, O. Prikhodko, K. Dauitkhan, S. Mikhailova, U. Doseke, S. Maksimova, K. Tauassarov

Switching effect in thin Ge2Sb2Te5 films modified by silver impurity — **Mo.Mat.P4**
N. Almassov, S. Dyussembayev, A. Serikkanov, A. Kadirov, N. Guseinov, Z. Tolepov

Reorganization of Interface Porosity of Crystalline Silicon Grown by Low Temperature Plasma Epitaxy — **Mo.Mat.P5**
J. E. Hong, J. Ho Oh, K. H. Kim

Grain Agglomeration in Low Temperature (250℃) Wet Annealed In-Zn-O Films for use in Solution Processed Thin-film Transistors — **Mo.Mat.P6**
M. P. A. Jallorina, J. P. S. Bermundo, M. N. Fujii, Y. Ishikawa, Y. Uraoka

The Lateral Growth of GeSn Wires on Patterned Si Substrate — **Mo.Mat.P7**
Y. Zhao , X. Zhang, B. Cheng, S. Feng, Y. Wang, C. Li

Synthesis of Poly-Si Film by Al-Catalyzed Conversion of Silicon Oxide Films — **Mo.Mat.P8**
J. H. Yoon

Optical properties of nanoscale Ge2Sb2Te5 films modified with Ag and Bi — **Mo.Mat.P9**
O. Prikhodko, K. Turmanova, Z. Tolepov, A. Zhakypov, A. Sazonov, S. Maksimova, G. Ismailova, S. Mikhailova

High-conductivity P-doped hydrogenated amorphous silicon-germanium (a-SixGe1–x:H) thin-films for thermoelectric — **Mo.Mat.P10**
C. R. Ascencio-Hurtado, A. Torres, R. Ambrosio, M. Moreno, I. E. Zapata-De Santiago, A. Itzmóyotl

Characterization

Passivated Selective Contact Structure Characterization by C-AFM and KPFM of the Conduction by Pinholes — **Mo.Ch.P1**
C. Marchat, A. Morisset, J. Alvarez, R. Cabal, M .E. Gueunier-Farret, J. P. Kleider

Nanoscale Study of the Hole-selective Passivating Contacts for High-Efficiency Silicon Solar Cells Using C-AFM Tomography — **Mo.Ch.P2**
M. Hývl, G. Nogay, F. J. Haug, P. Loper, A. Ingenito, M. Ledinský, C. Ballif, A. Fejfar

Electroformed Silicon Nitride-Based Light Emitting Memory Device Investigated by SEM, EDX and Real-Time Optical Microscopy Analyses — **Mo.Ch.P3**
M. Anutgan, T. Anutgan, I. Atilgan

Investigation on Luminescent Quantum Efficiencies, Luminescent Stabilities and Ultrafast Radiative Recombination Processes in a-SiNxOy Systems — **Mo.Ch.P4**
P. Zhang, L. Zhang , F. Lv, R. Cheng, F. Liu, J. Zhang, Y. Li

Alternating Current Implementations of the Moving Photocarrier Grating Technique — **Mo.Ch.P5**
L. Kopprio, F. Ventosinos, C. Longeaud, J. Schmidt

Photoluminescence Decay Mapping for the Inhomogeneities Imaging of Passivated Silicon — **Mo.Ch.P6**
D. Kudryashov, A. Gudovskikh, I. Morozov

Growth Kinetics of H2 Plasma Subjected a-Si:H Films: AFM Surface Morphology Studies — **Mo.Ch.P7**
V. Kanneboina, R. Madaka, P. Agarwal

The Interpretation of Infrared Spectra of Si-H and/or Si-H2 Groups on Si(111), Si(110) and Si(100) Surfaces — **Mo.Ch.P8**
J. Šebera, V. Sychrovský, J. Zemen, V. Jirásek, J. Holovský

Optical and Structural Properties of Amorphous Silicon-Carbon alloys thin films — **Mo.Ch.P9**
S. Nemmour, F. Kail, L. Chahed, P. Roca i Cabarrocas

a-SixGe1–x:H Thermoelectric Thin Film Schottky Diodes: Characterization and Applications — **Mo.Ch.P10**
I. E. Zapata-De Santiago, A. Torres, C. R. Ascencio-Hurtado, C. Reyes, M. T. Sanz, A. Itzmóyotl

Investigation of ZnO/BST Interface for Thin Film Transistor Applications — **Mo.Ch.P11**
K. Kandpal, N. Gupta, J. Singh, C. Shekhar

Optical properties of amorphous film composites TiO_2<Ag>andC-TiO_2<Ag>

Yerzhan Mukhametkarimov, Oleg Prikhodko, Kuanysh Dauitkhan, Svetlana Mikhailova, Ulantai Doseke Suyumbika Maksimova and Kambar Tauassarov

National Nanotechnological Laboratory of Open Type, al-Farabi Kazakh National University, al-Farabi 71, 050038 Almaty, Kazakhstan

Currently, the amorphous semiconductor nanocomposite materials based on titanium dioxide and silver nanoparticles (TiO_2<Ag>) have aspecial interest [1, 2]. This is due to the specific features of the composite components. For example, TiO_2 films have the highest refractive index in the visible region of the spectrum among all similar materials used as a matrix. In addition, TiO_2 films have high photoactivity in the UV radiation range, which makes it possible to use them in optoelectronics, solar energy and etc. [3].

In this paper we study the optical plasmon resonance in film composites based on titanium dioxide TiO_2 and C-TiO_2 matrices and silver nanoparticles (TiO_2<Ag> and C-TiO_2<Ag>, respectively). The film composites were obtained by ion-plasma RF co-sputtering of titanium dioxide and silver as well as titanium dioxide, silver and graphite combined targets. It is shown that TiO_2<Ag> film nanocomposites are characterized by an amorphous TiO_2 matrix containing isolated ~ 2 nm sized silver nanoparticles. It is established that the TiO_2 matrix is a wide-gap semiconductor with conductivity at room temperature $\sigma = 6.6 \cdot 10^{-10}$ $Ohm^{-1} \cdot cm^{-1}$ and the optical band gap $E_g = 3.2$ eV.

Fig. 1 shows the optical density spectra of the TiO_2<Ag> and C-TiO_2<Ag> nanocomposites. It follows from the **fig.1** that resonance absorption in TiO_2<Ag>film composites is characterized by a wide asymmetrical resonance peak with maximum appriximately at 500 nm. Modification of TiO_2<Ag> nanocomposite with carbon atoms leads to the increase in the intensity of resonance absorption peak and to the shift of the maximum to the short-waveregion of the spectrum, from 500 nm to 484 nm.

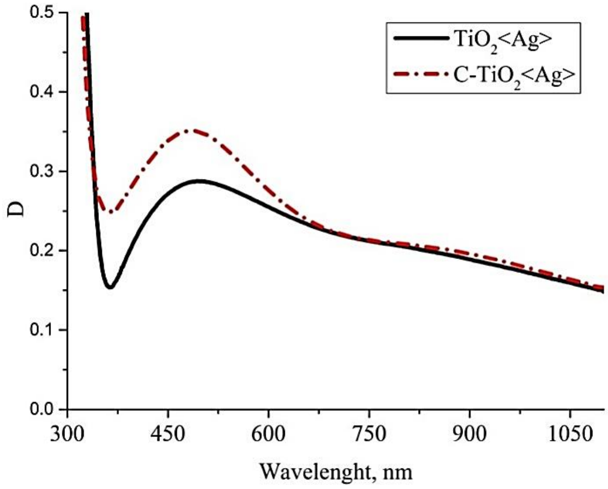

Fig. 1 Optical density of the TiO_2<Ag> and C-TiO_2<Ag>films

The differences in the optical resonance absorption spectra for TiO_2<Ag> and C-TiO_2<Ag>composites apparently are due to an additional clusterization of silver nanoparticles in the matrix C-TiO_2<Ag> owing to carbon atoms presence.

Keywords: titanium dioxide, amorphous carbon, film composites, plasmon resonance

References

[1] Jai Prakash, Promod Kumar, R A Harris, et all, *Synthesis, characterization and multifunctional properties of plasmonic Ag–TiO_2 nanocomposites,* Nanotechnology, **27,** 355707 (2016)

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Acknowledgments

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