CNM-4 2015

International Meeting

CLUSTERS AND NANOSTRUCTURED MATERIALS (CNM'4)

PROGRAM and MATERIALS

Uzhgorod Ukraine

12 – 16 October, 2015

National Academy of Sciences of Ukraine
Institute of Physics
G.V.Kurdyumov Institute for Metal Physics
V.E. Lashkaryov Institute for Semiconductor Physics
Institute for Information Recording
Uzhgorod Scientific-Technological Center of the Institute for Information Recording
Uzhgorod National University

INTERNATIONAL MEETING

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Uzhhorod *Vodohraj* Ukraine,
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PROGRAM & MATERIALS OF THE MEETING

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The edition is designed for scientists, engineers, higher school lecturers, post-graduates and students of corresponding specialities.

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TUESDAY, 13TH OF OCTOBER, 2015

8^{00} – 9^{00} – breakfast

POSTER SECTION

PLENARY
Chairman: Shpotyuk O.

9^{00}– 9^{50} – CURRENT OSCILLATIONS UNDER QUANTUM STATE TRANSFER UNDER HIGH LATERAL ELECTRIC FIELDS IN InGaAs/GaAs HETEROSTRUCTURES WITH QUANTUM WELLS
Bilyovskii P.A., Poroshin V.N., ***Vinoslavskii M.N.***, Kochelap V.O., Baidus N.V., Zvonkov B.N.
Institute of Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine.

9^{55}– 10^{45} – MAGNETIC STATES OF METAL NANOLAYERS UNDER SPIN TRANSPORT
Sohatsky V.P.
Taras Shevchenko Kiev National University, Ukraine.

10^{45} – 11^{15} – coffee-break

PLENARY
Chairman: Mitsa V.M.

11^{15} – 12^{05} – INKJET PRINTED METAL STRUCTURES USED AS ELECTRODES IN FLEXIBLE ORGANIC SOLAR CELLS
Popovic K., Six B., Postl M., Jäger M., Blümel A., Sax S., Nau S., Klug A., List-Kratochvil E.J.W.
NanoTecCenter Weiz Forschungsgesellschaft mbH, Weiz, Austria.

12^{10} – 13^{00} – LOCALIZATION OF ENERGY OF A LASER RADIATION IN SPACE BY MEANS OF AN ULTRASONIC WAVE
Peleshchak R.M., Kuzyk O.V., Dan'kiv O.O., Kryvoruchko Y.
Drohobych Ivan Franko state pedagogical university, Drohobych, Ukraine.

13^{25} – 15^{00} – lunch

PLENARY
Chairman: Rubish V.M.

15^{00} – 15^{50} – PHOTOAGING IN ANTIQUE PIGMENTS BASED ON REALGAR AND IN NANOSTRUCTURED CHALCOGENIDE GLASSES
Mitsa V., Marton A., Holomb R., Kuchak I., Ihnatolja P.
Uzhhgorod National University, Uzhgorod, Ukraine.

15^{55} – 16^{25} – LASER ASSISTED TRANSFORMATIONS OF CHALCOGENIDE NANOLAYERS SURFACE: SRPES, SERS AND DFT STUDY
Holomb R. M.
Uzhgorod National University, Uzhgorod, Ukraine.

16^{30} – 17^{00} – NANOINHOMOGENEITIES IN CHALCOGENIDE GLASSES AND SPATIAL DISPERSION
Kozak M.I.
Uzhhorod National University, Uzhhorod , Ukraine.

16^{00} – 17^{30} – coffee-break

PHOTOAGING IN ANTIQUE PIGMENTS BASED ON REALGAR AND IN NANOSTRUCTURED CHALCOGENIDE GLASSES

Mitsa V., Marton A., Holomb R., Ihnatolja P., Fekeshgazi I., Kuchak I.
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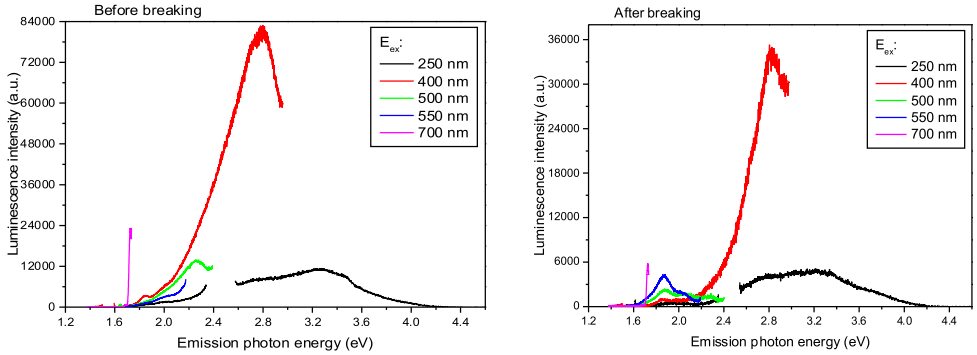

a) b)

Fig. PL spectra of g-As_2S_3 at different energies (wavelength) of excitations :
a- taken from surface aged which has aged during 10 years.
b) taken from freshly fractured surface

Joint consideration of Raman [1] and PL spectra (Fig., b) of c-$As_{40}S_{60}$ with realgar inclusion indicates that increasing energy of excitation from 1.17 to 1.58 eV leads to polymorphic realgar-pararealgar transition. The maximal intensity of polymorphic transition has been occurred at 2.4 eV . Analysis of PL spectra has shown that starting from energy of excitation near 2.25 eV simultaneously with polymorphic transformations are occur the processes of surface oxidation. Formation of PL bands (Fig.b) at this energies position which are typical for As_2O_3 and As_2O_5 [2] is argument for this conclusion . In same time at the energy of excitation near 2.4 eV we found in the Raman spectrum of the appearance new band at 680 cm^{-1}, typical for of $As(OH)_3$ [3]. In PL spectrum at the $W_{ex.4}$ = 3.1 eV (400 nm) a maximal intensity has the PL band at 2.8 eV (Fig.), which position is typical for the band in PL spectrum of $As_2O_3xnH_2O$ [4] solution. We confirm that in ancient papyri [5], painted by realgar ,of pigment color changes from red to yellow is due light stimulated realgar to pararealgar transition and bleaching some painted places is due the formation of oxide phases, followed by dissolution of the oxide crystals in the adsorbed by surface moisture.

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2. Finnie M. and Bohn P. W. Appl. Phys. Lett. 74(1999)1096.
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4. Gorjachev D., Sresely O. FTP, 31(1997)1383
5. Daniels V., Leach B . Papyri from the British Museum's collection housed in the Department of Ancient Egypt and Sudan. The Book of the Dead of Any (a funerary papyrus).

CONTENT

- PROGRAM 4
- PLENARY 18
- NANODIMENSIONAL SYSTEMS: STATE AND PERSPECTIVES RESEARCH IN THE NAS OF UKRAINE

  Uvarov V.M., Malchevskii I.A., Bespalov S.A. 19
- GOLDEN RESOURCE FOR PDT: PHOTODYNAMIC THERAPY OF TUMOURS ENHANCED BY GOLD NANOPARTICLES

  Gamaleia N., Shton I., Shishko E., Dolinsky G., Shcherbakov A., Kutsevol N., Chumachenko V., Lavrinenko E., Yashchuk V., Slobodyanyuk A., Losytskyy M. 20
- GOLD/ACRYLIC POLYMER AND Gold/CHALCOGENIGE GLASS NANOCOMPOSITES: TECHNOLOGY AND APPLICATION FOR PHOTONIC ELEMENTS

  Burunkova J., Zhuk D. Denisyuk, I., Csarnovics I., Molnar S., Kokenyesi S. 21
- PROSPECTS OF DEVELOPMENT OF OPTICAL MEMORY SYSTEMS

  Petrov V.V., Kryuchyn A. A., *Beliak Ie.V.* 22
- CURRENT OSCILLATIONS UNDER QUANTUM STATE TRANSFER

  Bilyovskii P.A., Poroshin V.N., Vinoslavskii M.N., Kochelap V.O., Baidus N.V., Zvonkov B.N. 24
- MAGNETIC STATES OF METAL NANOLAYERS UNDER SPIN TRANSPORT

  V.P.Sohatsky 25
- INKJET PRINTED METAL STRUCTURES USED AS ELECTRODES IN FLEXIBLE ORGANIC SOLAR CELLS

  Popovic K., Six B., M. Postl[1], M. Jäger, A. Blümel, S. Sax, S. Nau, A. Klug, List-Kratochvil E. J.W. 26
- LOCALIZATION OF ENERGY OF A LASER RADIATION IN SPACE BY MEANS OF AN ULTRASONIC WAVE

  Peleshchak R.M., Kuzyk O.V., Dan'kiv O.O., Kryvoruchko Y. 27
- PHOTOAGING IN ANTIQUE PIGMENTS BASED ON REALGAR AND IN NANOSTRUCTURED CHALCOGENIDE GLASSES

  Mitsa V., Marton A., Holomb R., Ihnatolja P., Fekeshgazi I., Kuchak I. 28
- LASER ASSISTED TRANSFORMATIONS OF CHALCOGENIDE NANOLAYERS SURFACE: SRPES, SERS AND DFT STUDY

  Holomb R. M. 29
- SPATIAL DISPERSION IN NANOSTRUCTURED GLASS

  Kozak M.I. 30
- POSITRONICS OF SUB-ATOMISTIC FREE-VOLUME IMPERFECTIONS IN NANOSTRUCTURIZED SOLIDS: TRACING THE PATH TOWARDS DATA ANALYSIS ALGORITHMS

  Shpotyuk O., Ingram A., Bujňáková Z. and Baláž P. 31
- MICRO-OPTICAL ELEMENTS IN CHALCOGENIDE AND CHALCOHALIDE SEMICONDUCTOR GLASS FABRICATED BY FEMTOSECOND LASER PULSES

  Kadan V., Blonskyi I., Shynkarenko Y., Rybak A., Shpotyk O., Calvez L. 32