

EuAsC₂S-12

April 16-21 2012
Corfu, GREECE



Chemistry
CARES
Powering the planet

Organized and Sponsored by
The University of Ioannina



12th Eurasia Conference on Chemical Sciences
Corfu, Greece, 16-21 April 2012

Chandris Hotel - Dassia Bay, Corfu

SCIENTIFIC PROGRAM

<http://eurasia12.uoi.gr>

POSTER SESSION
POLYMERS SCIENCE S14

S₁₄-PP1	<p>Preliminary studies concerning polyaniline embedded lanthanide complexes as emissive layers for electroluminescent devices V. Musat, <u>M. Popa</u>, C.S. Stan <i>"Gheorghe Asachi" Technical University of Iasi, Faculty of Chemical Engineering and Environmental Protection,</i> 73 Prof.dr.docent Dimitrie Mangeron, 700050, Iasi, Romania,</p>
S₁₄-PP2	<p>Biodegradability Study on New Polymers Derived from D-glucose A.M. Pană^a, L.M. Ștefan^b, G. Bandur^b, P. Sfirloagă^c, V. Gherman^b, L.M. Rusnac^b, <u>M. Popa</u>^a ^a <i>Gheorghe Asachi Technical University, Faculty of Chemical Engineering and Environmental Protection, 73 Prof. dr. docent Dimitrie Mangeron, 700050, Iași, Romania</i> ^b <i>Politehnica University of Timișoara, Faculty of Industrial Chemistry and Environmental Engineering, 6 Carol Telbisz, 300001, Timișoara, Romania</i> ^c <i>The Institute of Research for Condensed Matter, 1 P. Andronescu Str., 300224, Timișoara, Romania</i></p>
S₁₄-PP3	<p>Effects of Feeding Type on the Properties of Emulsion Copolymers A. Kahraman, D. Maşalı, B. Poyrazoğlu, <u>A. Sarac</u> <i>Department of Chemistry, Yildiz Technical University, 34220 Esenler, İstanbul, TURKEY</i></p>
S₁₄-PP4	<p>Preparation of Conductive Polyaniline/ Chlorosulfonated Polyethylene Blend via Solution Mixing and Study of Their Properties <u>Elaheh Bakhtiarian</u>^{a,b,c}, Peter Foot^c <i>(a) Islamic Azad University, Oxford Branch, Oxford, United Kingdom</i> <i>(b) Dept. of Chem., Islamic Azad University, South Tehran Branch, Tehran, Iran,</i> <i>(c) Materials Research Group, Faculty of Science, Engineering and Computing, Kingston University, Penrhyn Road, Kingston upon Thames, Surrey KT1 2EE, United Kingdom</i></p>
S₁₄-PP5	<p>Biodegradation of polyglucanurethane networks based on xanthan and blocked poluisocyanate <u>A.V. Hubina</u>, N.V. Kozak, E.V. Lobko <i>Institute of Macromolecular Chemistry NAS of Ukraine, Kharkivske chaussee, 48, Kyiv, Ukraine</i></p>
S₁₄-PP6	<p>Self-Healing Coatings For Concrete Protection <u>Ye-Ji Lim</u>, Young-Kyu Song, Hwan-Chul Yu and Chan-Moon Chung <i>Department of Chemistry, Yonsei University, Wonju, Gangwon-do 220-710, South-Korea</i></p>
S₁₄-PP7	<p>Crack Healing in a PFCB-type polymer by microwave irradiation <u>Mina Park</u>, Mi-Ran Yu, Hwan-Chul Yu and Chan-Moon Chung <i>Department of Chemistry, Yonsei University, 1 Yonseidae-gil, Wonju, Republic of Korea</i></p>
S₁₄-PP8	<p>Characterization of dextrans obtained by different conditions of starch hydrolysis <u>Iva Vukićević</u>^a, Tina Kamčeva^a, Maja Radisavljević^a, Vladimir Pavlović^b, Zoran Vujčić^c, Marijana Petković^a ^a <i>Institute of Nuclear Sciences „Vinča“, University of Belgrade, Mike Petrovića Alasa 12-14, Belgrade, Serbia</i> ^b <i>Faculty of Agriculture, University of Belgrade, Nemanjina 6, Belgrade, Serbia</i> ^c <i>Faculty of Chemistry, University of Belgrade, Studentski trg12-16, Belgrade, Serbia,</i></p>
S₁₄-PP9	<p>Synthesis, Dielectric And Swelling Characterization Of Novel Chitosan-Poly((N,N-Dimethylamino)Ethyl Methacrylate) Semi-Ipn Gel Films <u>Gökçen Yenici</u>^{a*}, Shokat Sarmad^a, Koray Gürkan^b, Gönül Keçeli^c, Gülten Gürdağ^a <i>a. Department of Chemical Engineering, Faculty of Engineering, Istanbul University, 34320, Avcilar, Istanbul, Turkey.</i> <i>b. Department of Electrical and Electronics Engineering, Faculty of Engineering, Istanbul University, 34320, Avcilar, Istanbul, Turkey.</i> <i>c. Department of Chemistry, Faculty of Engineering, Istanbul University, 34320, Avcilar, Istanbul, Turkey.</i></p>

- Papadopoulou A. S₄-PP10
 Papaefstathiou G.S. S₉-OP8
 Papaefthymiou H. S₄-PP6
 Papastefanou C. S₁₂-PP5
 Papatriantafyllopoulou C. S₉-OP4
 Papazoglou I. S₁-OP21
 Pappas C. S₃-OP14
 Pappas-Gogos G S₈-PP7
 Paraskevopoulou P. S₁-PP24
 Paravatou M. S₁-PP8
 Parigi G. S₂-PP6, S₅-PP10
 Parigoridi I. S₁₂-PP2
 Park J. S₁₁-PP15, S₂-OP1
 Park M. S₁₄-PP7
 Park Y. S. S₁₁-PP7
 Parlak Y. S₂-OP12
 Patinioti Z. S₁-PP8
 Pavlou A. S₅-OP9
 Pavlović V. S₁₄-PP8
 Pecchi G. S₄-PP3
 Pechlaner M. S₁-PP6
 Peptu C. S₁₁-PP1, S₁₁-PP2, S₁₄-OP7
 Perdih F. S₁-PP19, S₁-PP21
 Perić M. S₅-PP5
 Perlepes S.P. S₉-OP2
 Peruzzini M. S₇-OP1
 Peschel E. S₄-OP11
 Petković M. S₁₄-PP8, S₅-PP7
 Petrou A. L. S₁-PP24
 Petukhov A.N. S₅-OP2
 Pfeifer É. S₅-OP8
 Philippopoulos A.I. S₉-OP5
 Piacentini E. S₄-OP15
 Pievo R. S₅-OP15, S₅-PP6
 Pilavtepe M. S₄-OP18
 Pinakoulaki E. S₅-OP9
 Ping Dou Q. S₂-OP7
 Pingsong X. S₃-PP34
 Pladio L. S₁₂-OP6
 Plamont M-A. S₅-OP10
 Pliotas C. S₅-OP12
 Poater A. S₇-OP7
 Poirier J. S₂-OP1
 Policar C. S₅-OP10
 Polydera A.C. S₄-PP10
 Polyzou C. D. S₉-OP2
 Ponton A. S₅-PP13
 Popa M. S₁₁-PP1, S₁₁-PP2, S₁₄-PP1, S₁₄-PP2
 Postel D. S₄-OP2
 Potash S. S₃-OP9
 Potocki S. S₁-OP1
 Poullos T. S₃-PP4
 Pournara A. S₁₁-PP14
 Poyrazoğlu B. S₁₄-PP3
 Pozan Soyly G.S. S₄-OP17, S₄-PP4, S₄-PP9, S₇-OP8
 Prazeres R. S₅-OP10
 Predojević Z. S₄-OP4, S₄-PP13
 Prell E. S₂-OP14
 Primikiry A. S₂-OP4, S₃-OP14
 Primikyri A. S₅-PP15
 Psomas G. S₁-OP17, S₁-PP10, S₁-PP15, S₁-PP17, S₁-PP18, S₁-PP19, S₁-PP21
 Psycharis V. S₁-PP10, S₁-PP15, S₁-PP17, S₁-PP18
 Pyrkosz M. S₁-PP11
- Q**
- Qendro G. S₂-PP12 S₅-PP16, S_{GMS}-OP3
 QinChen S. S₃-PP34
 Quinete N. S₄-OP10
- R**
- Radisavljević M. S₁₄-PP8, S₅-PP7
 Ragoussi M.-E. S₁₁₋₁-OP5
 Rahman I. A. S₁₂-OP4
 Rahmani F. S₃-OP10, S₃-PP1
 Rakhmana R. S₁₀-OP5
 Rallidis LS S₈-PP9
 Ramezani M. S₃-OP10
 Rao A S. S₃-PP24
 Raptopoulou C.P. S₁-PP10, S₁-PP17, S₁-PP18
 Raptoupoulou C.P. S₁-PP15
 Rasmussen A. S₅-OP12
 Real J. S₉₋₁-OP6
 Reedijk J. S₁-OP6
 Reichenauer T.G. S₄-OP8
 Reinis A. S₁-OP27
 Resende D. S₃-OP8
 Ri Han C. S₃-PP34
 Richter O-M. H. S₅-PP3
 Rizeq N. S₁-PP21
 Rizos I S₈-PP9
 Rizzarelli E. S₁-OP29
 Ro Y. S₁₁-PP15
 Robin A. S₁₄-OP6
 Rode B. M. PL9, S₆-OP7
 Roglić G. M. S₄-PP7
 Rojanarata T. S₁₁-PP13, S₁₁-PP16
 Roşca I. S₁₁-PP2
 Rotariua L. Bala C. S₁₀-OP7
 Rotenberg B. S₁₀₋₁-OP3
 Rouge P. S₁₀-OP4

Preliminary studies concerning polyaniline embedded lanthanide complexes as emissive layers for electroluminescent devices

V. Musat, M. Popa, C.S. Stan

"Gheorghe Asachi" Technical University of Iasi, Faculty of Chemical Engineering and Environmental Protection,
73 Prof.dr.docent Dimitrie Mangeron, 700050, Iasi, Romania, marpopa2001@yahoo.fr

Scop: The paper reports some preliminary studies regarding the possibility of embedding of some new highly luminescent lanthanide complexes in polyaniline (PANI) for further developing of electroemissive layers. Beside the preparation of the Eu and Tb complexes using succinimide and n-hydroxysuccinimide as ligands, following the procedure described elsewhere [2] the present study investigates the embedding of these complexes in polyaniline for further obtaining of thin layers. To achieve the required excited states followed by the radiative transitions in the lanthanide central atom, efficient energy transfer from the coordination site is required. Since this condition was achieved in case of the studied complexes according to the previous studies [2] the main concern in order to trigger electroluminescence, is the efficient transport of charge carriers through the emissive layers. PANI is known to be an effective hole transport medium [3]. By embedding the lanthanide complexes in a PANI matrix, hole transport through emissive layer could be achieved.

Methods: First, the lanthanide complexes were prepared in aqueous medium at 1:3 molar ratio (central atom: ligand) followed by purification and drying at room temperature. The prepared complexes were introduced in the reaction medium in the early stage of the ammonium persulphated assisted, oxidative polymerization of aniline.

The prepared PANI embedded complexes thin films were investigated through X-ray diffraction and SEM. The XRD patterns were recorded in the 10 - 30° 2 Theta range on a Panalytical X'Pert Pro diffractometer provided with a Cu-K α radiation source ($\lambda = 0,154060$ nm). SEM micrographs were recorded with a Hitachi TM-3000, working at 15 KV accelerating voltage. The electrical conductivity of the prepared films was also investigated with a Novocontrol Alpha-A Broadband Dielectric Spectrometer.

Results and Discussion: From morphologic point of view the characterization of the obtained films revealed a compact homogeneous structure for both investigated samples: polyaniline matrix and also for the polyaniline embedded lanthanide complexes. The dielectric measurements were carried out at room temperature, both samples presenting relatively high conductivity, in the range of 10^{-2} - 10^{-4} S/cm.

Electroluminescence was observed under a moderate electric potential applied on a thin layer of PANI embedded lanthanide complex deposited between two ITO coated glass substrates.

ACKNOWLEDGEMENTS

Financial support for this work was provided by the National Research Council (CNCS), Romanian Government in the framework of PN-II/IDEI PROGRAM (PN-II-ID-PCE-2011-3-0708, Grant No. 335/5.10.2011).

REFERENCES

- [1] McDiarmid, *Nobel Lecture*, **2000**, "Synthetic metals": a novel role for organic polymers,.
- [2] Corneliu S. Stan, Ioan Rosca, Daniel Sutiman, Marius S. Secula, *Journal of Rare Earths*, **2012**, Highly luminescent Eu and Tb complexes based on Succinimide and N-Hydroxysuccinimide, in press.
- [3] D. C. Trivedi. In *Handbook of Organic Conductive Molecules and Polymers*, H. S. Nalwa(Ed.), Vol. 2, pp. 505–572, Wiley, Chichester, **1997**.