

Table of Contents

Organizers

Invited Speakers

International Advisory Committee

Picture

Topic 1: Multifunctional Nanocomposites

Precession Electron Diffraction Assisted Orientation Mapping in the Transmission Electron Microscope

J. Portillo, E.F. Rauch, S. Nicolopoulos, M. Gemmi and D. Bultreys 1

TEM Characterization on the Nanocomposite Al 7075 and Silver Nanoparticles Synthesized by Powder Metallurgy

R. Flores-Campos, R. Deaquino-Lara, J.M. Herrera-Ramírez, A. Ponce, I. Estrada-Guel, M. Miki-Yoshida and R. Martínez-Sánchez 9

Synthesis of Plasticizer-Based Ferrofluid and its Use in the Preparation of Magnetic PVC Nanocomposite

E. Servín-Hernández, O.S. Rodríguez-Fernández and L.A. García-Cerda 13

Effect of Type and Concentration of Ionomer Compatibilizer on the Hdpe/ Ionomer/ Clay Nanocomposites Morphology

S. López-García, S. Sánchez-Valdés and L.F. Ramos de Valle 17

Elemental Analysis of a Heterogeneous Polymeric System by EDS: Detection of the Compatibilizer Agent Containing Si Atoms and Silver Nano-Particles (AgNP's) in High Impact Polystyrene

F. Soriano, C. de Anda, G. Morales and A. Ponce 21

Dielectric Properties of PMMA-SiO₂ Hybrid Films

M.D. Morales-Acosta, M.A. Quevedo-López, H.N. Alshareef, B.E. Gnade and R. Ramírez-Bon 25

Synthesis and Characterization of Magnetic Polyurethane Nanocomposite Foams

A. Cámarra-Hinojosa, D. Bueno-Baqués, O.S. Rodríguez-Fernández and R.F. Ziolo 29

Topic 2: Smart Materials

Preparation of Electrospun Barium Titanate – Polyvinylidene Fluoride Piezoelectric Membranes

V. Corral-Flores, J.J. Pérez-Herrera, E. Torres-Moye, J. Romero-García, D. Bueno-Baqués and R.F. Ziolo 33

Topic 3: Nanoparticles: Synthesis and Applications

Preparation and Properties of CoFe₂O₄ Synthesized by the Modified Citrate-Gel Method

E.M. Múzquiz-Ramos, D.A. Cortés-Hernández, O.A. Herrera-Romero and J.C. Escobedo-Bocardo 39

Alumina-Copper Composites with High Fracture Toughness and Low Electrical Resistance

E. Rocha-Rangel and J.G. Miranda-Hernández 43

Obtaining NiHCF Nanoparticles Using a Reverse Micellar System

A. Gutiérrez Becerra, T. Vega Venegas, M. Bárcena Soto, N. Casillas and J.I. Escalante 47

Iron Oxide Nanoparticles Obtained from a Fe(II) - Chitosan Polymer Film

J.F. Luna Martínez, E. Reyes-Melo, V. González-González, A. Torres-Castro, C. Guerrero-Salazar and S. Sepúlveda-Guzmán 51

Synthesis and Characterization of Branched Gold Nanoparticles

A. Mayoral, A. Vazquez-Duran, S.G. Heinze and M. José-Yacamán 57

Surface Modification of ZnO Nanoparticles

R. Betancourt-Galindo, M.L. Berlanga Duarte, B.A. Puente Urbina, O.S. Rodríguez-Fernández and S. Sánchez-Valdés 61

Topographical Characterization of Electrodeposited Nickel Nanoparticles on an Indium Tin Oxide on Glass Thin Film

G.T. Martinez, G. Zavala and M. Videau 65

Analysis of Nanocrystalline Intermetallic Compounds from their X-Ray Diffraction Patterns

H. Rojas-Chávez, F. Reyes-Carmona, G. Plascencia and D. Jaramillo-Vigueras 69

Study of Hafnium (IV) Oxide Nanoparticles Synthesized by Polymerized Complex and Polymer Precursor Derived Sol-Gel Methods

R. Ramos-González, L.A. García-Cerda, H.N. Alshareef, B.E. Gnade and M.A. Quevedo-López 75

Preparation of Nano-Ceramics via Aqueous Sol-Gel Method Modified with Surfactants: An Overview

Y. Perera 79

On the Influence of Silver Nanoparticles Size in the Electrical Conductivity of PEDOT: PSS

R.G. Melendez, K.J. Moreno, I. Moggio, E. Arias, A. Ponce, I. Llanera and S.E. Moya 85

Topic 4: Structure Phenomena and Modeling

Electron Diffraction Study of Pentagonal Cross-Sections Nanowires

J. Reyes-Gasga, J.M. Montejano-Carrizales and M. José-Yacamán 91

Topic 5: Growth of Thin Films

Study on the Microstructure and Electrical Properties of Pb(Zr_{0.53} Ti_{0.47})O₃ Thin-Films

L.A. Baldenegro-Perez, W. Debray-Mechtaly, E. Fuentes-Fernandez, M.A. Quevedo-López, H.N. Alshareef, P. Shah and B.E. Gnade 97

Formation of Si Nanocrystals in Thin SiO₂ Films for Memory Device Applications

M. Curiel, I. Petrov, N. Nedev, D. Nesheva, M.R. Sardela, Y. Murata, B. Valdez, E. Manolov and I. Bineva 101

Fe₂O₃ Thin Films Prepared by Ultrasonic Spray Pyrolysis

M.A. García-Lobato, A. Hernández-V, H.M. Hdz-García, A.I. Martinez and M.I. Pech-Canul 105

Synthesis and Atomic Force Microscopy Contact Current Images of Aluminum Doped ZnO Thin Films

N. Muñoz Aguirre, J.E. Rivera-López, L. Martínez Pérez and P.A. Tamayo Meza 109

Structural and Morphological Properties of Hf_xZr_{1-x}O₂ Thin Films Prepared by Pechini Route

L.A. García-Cerda, B.A. Puente Urbina, M.A. Quevedo-López, B.E. Gnade, L.A. Baldenegro-Perez, H.N. Alshareef and M.A. Hernández-Landaverde 113

Topic 6: Semiconductors and Optoelectronic Materials

Extended Crystallographic Defects in Gallium Nitride

Y.A. Rojas Dasilva, P. Ruterana, L. Lahourcade, E. Monroy and G. Nataf 117

Structural Characterization of Poly(Sodium 4-Styrene Sulfonate)/CdS Semiconductor Nanoparticle Composites

M.P. Espe, S.Y. Ortiz-Colon, A. Ponce and R.F. Ziolo 123

Topic 7: Other Nanomaterials and Interdisciplinary Topics

Electron and Atomic Force Microscopy of Electrochromic WO₃ and Molybdenum Doped WO₃ Thin Films Deposited by Pulsed Spray Pyrolysis

D.R. Acosta, J.M. Ortega and C.R. Magaña 129

Morphologic Modification in ABS by the Incorporation “*in Situ*” of Nano-ZnO: Study of the Effect on Characteristics and Final Properties

R. Díaz de León, R. Betancourt-Galindo, B.A. Puente Urbina, P. Acuña and L. Falcón 135