

IMM DOCTORAL SCHOOL PROGRAM

CASTRO MARINA (LECCE), 13-17 MAY 2024



FROM MICRO TO NANO: SYNTHESIS, CHARACTERIZATION AND MODELING FOR FUTURE ELECTRONICS AND SENSING

timing		Monday 13th May 2024	Tuesday 14th May 2024	Wednesday 15th May 2024	Thursday 16th May 2024	Friday 17th May 2024
Fundamentals	9:00 - 9:45	A R R I V A L S	SYNTHESIS	CHARACTERIZATION	MODELLING	Last remarks and comments, assessment questionnaire
	9:45 - 10:30		P. Prete , <i>Synthesis of epitaxial nanostructures (MOVPE, VLS, SAE)</i>	F. Liscio , <i>Surfaces, interfaces and nanostructures: structure and morphology probed by X-ray scattering technique</i>	E. Paladino , <i>Introduction to quantum technologies</i>	
	10:30 - 11:00		R. Lo Nigro , <i>Chemical vapour deposition techniques (CVD, MOCVD and ALD): precursors, deposition mechanisms and microelectronic applications.</i>	G. Pellegrino , <i>XPS Techniques: principles and potentialities for the surface analysis of functional materials</i>	C. Degli Esposti Boschi , <i>Lattice Model Hamiltonians to study the effect of strong correlations in many-body quantum systems</i>	
	11:00 - 11:45		<i>coffe break</i>	<i>coffe break</i>	<i>coffe break</i>	
	11:45 - 12:30		F. La Via , <i>SiC fast growth rate epitaxy by chloride precursors</i>	A. Lamperti , <i>Fundamentals of Secondary Ions Mass Spectrometry (SIMS): probing chemistry with high sensitivity.</i>	A. Debernardi , <i>First principles spectroscopy for the study of innovative materials: from nanoelectronics to sensors</i>	
		F. Roccaforte , <i>Wide band gap semiconductors SiC & GaN for energy efficient power devices: physics and technology</i>	A. Taurino , <i>Electron microscopy as a tool to study morphology, structure and chemistry of materials and devices from micro to nano scale and beyond</i>	F. Della Sala , <i>Computational nanoplasmonics</i>		
LUNCH TIME						
			APPLICATIONS 1: NEUROMORPHIC DEVICES AND NEUROSCIENCE	APPLICATIONS 3: ELECTRON MICROSCOPY	APPLICATIONS 5: SOLAR CELLS	
Applications	15:30 - 16:15	WELCOME SESSION: presentation of the institute sites, facilities, projects; presentation of the school	S. Brivio , <i>Emerging memory devices based on migration of ions in solid electrolytes for neuromorphic applications</i>	Andrea Parisini , <i>From colors to number: applications of quantitative Energy Dispersive Spectroscopy (EDS) in STEM to ultra-shallow junctions, ultra-thin defects and nanoparticles</i>	I. Deretzis , <i>Bridging length scales in perovskites solar cells: density functional theory, atomistic kinetics and devices</i>	D E P A R T U R E S
	16:15 - 17:00		A. Convertino , <i>Innovative Applications of Nanomaterials and Microelectronics in Neuroscience Research</i>	A. Gradone , <i>In-liquid transmission electron microscopy</i>	S. Valastro , <i>Perovskite Solar Cells from materials to devices</i>	
	17:00 - 17:30	<i>coffe break</i>	<i>coffe break</i>	<i>coffe break</i>		
			APPLICATIONS 2: TWO-DIMENSIONAL MATERIALS	APPLICATIONS 4: OPTICAL SENSING and PHOTONIC DEVICES	APPLICATIONS 6: ELECTRONIC DEVICES	
	17:30 - 18:15	POSTER SESSION/FLASH TALKS	C. Martella , <i>Two-dimensional materials beyond graphene</i>	S. Lombardo , <i>Single Photon Detectors: Technologies and Applications</i>	A. La Magna , <i>Technological design with atomistic simulations: how to make difficult things simple</i>	
	18:15 - 19:00		A. Liscio , <i>Graphene-Related Materials for Industrial Applications: from Standardization to Space and Environmental Applications</i>	V. Mussi , <i>Raman microspectroscopy: from high resolution micrometric thermography to nano-biosensing</i>	A. Valletta , <i>Numerical simulation of micro- and nano-electronic devices: TCAD and compact modelling</i>	
19:00 - 19:45	M.A. Signore, L. Velardi , <i>Piezoresponse Force Microscopy (PFM): a non-destructive technique to investigate electromechanical responses at the nanometer length scale. From theory to practical applications</i>		M.G. Manera , <i>Versatile plasmonic nanostructures as smart optical sensing platforms: from design to Point-of-Need diagnostic devices</i>	W. Fuscaldo , <i>Terahertz Leaky-Wave Antennas</i>		
	DINNER	DINNER	SOCIAL DINNER	DINNER		