



# PROGRAMMA

**XII Convegno Nazionale INSTM**

**XV Convegno Nazionale AIMAT**

Ischia Porto, 21-24 Luglio 2019



## **CHAIRMEN**

Teodoro Valente, INSTM - Sapienza Università di Roma

Andrea Caneschi, INSTM - Università di Firenze

Laura Montanaro, AIMAT - Politecnico di Torino

MariaPia Pedefferri, AIMAT - Politecnico di Milano

## **COMITATO SCIENTIFICO**

Domenico Caputo, AIMAT - Università di Napoli Federico II

Gianluca Cicala, AIMAT - Università di Catania

Stefano Cicchi, INSTM - Università di Firenze

Luigi Coppola, AIMAT - Università di Bergamo

Paolo Fornasiero, INSTM - Università di Trieste

Luca Lusvarghi, AIMAT - Università di Modena e Reggio Emilia

Aldo Romani, INSTM - Università di Perugia

Alessandra Sanson, INSTM - CNR/ISTEC

Marco Sebastiani, AIMAT - Università di Roma TRE

Angela Serpe, INSTM - Università di Cagliari

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# DOMENICA 21 LUGLIO 2019

## SALA PITECUSA

**16.00** Registrazione dei partecipanti

**17.15** Apertura dei lavori e saluti di benvenuto

*Prof. Laura Montanaro – Presidente AIMAT*

*Prof. Teodoro Valente – Presidente INSTM*

### PLENARY LECTURES

Chairman: MariaPia Pedefferri

**17.30** MOFs AND PCPs, PERSPECTIVE MATERIALS FOR  
BIOLOGICAL AND CATALYTIC APPLICATIONS

*Pettinari C*

**18.00** THE RELEVANCE OF THE PROCESSING OPERATIONS ON  
THE PERFORMANCE OF POLYMER SYSTEMS

*La Mantia FP*

**18.20** STRATEGIES TO CREATE A BRIDGE BETWEEN THE  
UNIVERSITY RESEARCH AND ENTERPRISE

*Nicolais L*

## SALA NITRODI

### Sessione dedicata al Progetto RENDERING

**15.30** Introduzione: descrizione obiettivi del progetto RENDERING e breve presentazione dei team operativi

*Stefania Federici - Università di Brescia*

**16.00** Attività svolta negli Workpackage del progetto RENDERING:

- A NOVEL GREEN METHOD FOR HEAVY METAL STABILIZATION BASED ON SEWAGE SLUDGE ASH RECOVERY RENDERING

*Alessandra Zanoletti - Università di Brescia*

- USE OF PILOT-PLANT FOR STABILIZATION: CO-COMBUSTIONE OF SEWAGE SLUDGE AND MUNICIPAL SOLID WASTE INCINERATION FLY ASH

*Assi Ahmad - Università di Brescia*

**17.00** Attività programmata nel II anno del progetto RENDERING

*Elza Bontempi - Consorzio INSTM*

**Sala Primavera: Coffe Break**

**17.30** Presentazione progetto di Regione Toscana POR 2017 Sludge 4.0 relativo al recupero e riutilizzo dei fanghi di trattamento biologico delle acque reflue. Breve descrizione, confronto con i risultati ottenuti dal progetto RENDERING e possibili sinergie di filiera tra i due progetti

*Andrea Caneschi – Università di Firenze*

**18.30** Tavola rotonda "La lezione sul riciclo proposta dal Progetto RENDERING e dai progetti precedenti che lo hanno originato". La partecipazione aperta dei ricercatori presenti. Intervengono:

*Teodoro Valente – Presidente Consorzio INSTM e  
Prorettore alla Ricerca ed al Trasferimento Tecnologico di  
Sapienza Università di Roma*

*Alberto Cigada – Politecnico di Milano e Nextmaterials Srl*

*Andrea Caneschi – Direttore Consorzio INSTM*

*Luigi Nicolais – CEO MATERIAS® Srl*

*Claudio Pettinari, Rettore Università di Camerino*

**19.45** Conclusioni

*Elza Bontempi – Università di Brescia*

*Teodoro Valente – Presidente Consorzio INSTM e  
Prorettore alla Ricerca ed al Trasferimento Tecnologico di  
Sapienza Università di Roma*

**20.15** Welcome Party

# LUNEDÌ 22 LUGLIO 2019

## SALA PITECUSA

### Sessione “Applicazioni tecnologiche, nuovi processi e nuova manifattura”

#### INVITED LECTURE

Chairman: Andrea Caneschi

- 9.00** ADDITIVE MANUFACTURING: THE ROLE OF POLITECNICO DI TORINO IN SUPPORTING THE MARKET GROW FOR MATERIAL AND PROCESSES

*Juliano L*

#### ORAL

Chairman: Andrea Caneschi

- 9.30** CHEMICAL MODIFICATIONS OF BIOCOMPATIBLE POLYMERS TO OBTAIN PHOTOCROSSLINKABLE MATERIALS FOR 3D PRINTING APPLICATIONS: FROM SYNTHETIC TO NATURAL MATERIALS

*Ronca A, D'Amora U, Raucci MG, Ronca S, Forte G, Ambrosio L*

- 9.45** ELECTROSPINNING OF SILICA GEL NANOFIBRES

*Malara A, Bonaccorsi L, Frontera P, Antonucci PL*



**10.00** MICROSTRUCTURE AND MECHANICAL BEHAVIOUR OF SELECTIVE LASER MELTED ALUMINUM - SILICON BASED ALLOYS

*Biffi CA, Fiocchi J, Bassani P, Tuissi A*

**10.15** ADDITIVE MANUFACTURING FOR TOOLING OF PLASTICS AND FIBER REINFORCED COMPOSITES

*Tosto C, Ognibene G, Saitta L, Catenaro R, Cicala G*

**10.30** ELECTROLESS PLATING ON GRAPHENE (GNPs) FOR SURFACE MODIFICATION AND COMPOSITES APPLICATIONS

*Marini D, Genova V, Quitadamo A, Pulci G, Bartuli C, Valente T, Valente M*

## Sala Primavera: POSTER & Coffe Break

**11.15** ANISOTROPIC BEHAVIOUR OF CARBON FIBER-REINFORCED POLYMER COMPOSITES PRODUCED BY ADDITIVE MANUFACTURING: EFFECTS OF FILLER ORIENTATION

*Padovano E, Pietroluongo M, De Camillis R, Lambertini V, Badini C*

**11.30** TRANSITION FROM POLYMERS COMPOSITES BASED ON NANODIAMOND AND GRAPHENE PLATELETS TO 3D MANUFACTURING

*Tamburri E, Politi S, Carcione R, Terranova ML*

**11.45 MATERIAL DEVELOPMENTS IN METAL ADDITIVE  
MANUFACTURING**

*Aversa A, Marchese G, Saboori S, Bassini E, Manfredi D,  
Biamino S, Ugues D, Bondioli F, Lombardi M, Fino P*

**12.00 EPOXY BLENDING FOR RESINS USED IN ADVANCED  
MANUFACTURING BY DLP PRINTING**

*Cicala G, Tosto C, Ognibene G, Saitta L, Recca G*

**12.15 WASTE COFFEE GROUND BIOCHAR AS A NEW HUMIDITY  
SENSING MATERIAL**

*Tulliani JM, Ziegler D, Jagdale P, Rovere M, Tagliaferro A*

**12.30 ON THE USE OF MSWI BOTTOM ASH TO PRODUCE  
ARTIFICIAL AGGREGATES**

*Farina I, Colangelo F, De Pertis M, Barbuto V, Limone B,  
Raimondo A, Cioffi R*

**12.45 UV-ACTIVATED RADICAL INDUCED CATIONIC FRONTAL  
POLYMERIZATION OF EPOXY-CARBON FIBER COMPOSITES**

*Sangermano M*

## Sessione "Sintesi, caratterizzazione, modelling dei materiali"

### INVITED LECTURE

Chairman: Stefano Cicchi

- 15.30** MICRO AND NANOMECHANICAL TESTING OF MATERIALS - FROM MATERIALS PHYSICS TO MATERIALS DESIGN

*Dehm G*

### ORAL

Chairman: Stefano Cicchi

- 16.00** NANOFIBERS CATALYST Pd/Fe<sub>3</sub>O<sub>4</sub> FOR THE TRANSFER HYDROGENOLYSIS OF BENZYL PHENYL ETHER

*Mauriello F, Paone E, Malara A, Bonaccorsi L, Frontera P*

- 16.15** CAPILLARY VISCOMETRY OF POWER LAW FLUIDS WITH SLIP: UNCERTAINTIES IN THE MEASUREMENT OF RHEOLOGICAL PROPERTIES

*Mollica F, Mazzanti V*

- 16.30** SYSTEMATIC AND MULTISCALE CHARACTERIZATION OF THERMOPLASTIC POLYMERS FOR CLEAR ALIGNER MANUFACTURING

*Tamburrino E, Contessi Negrini N, Razionale AV, Farè S, Chiesa R, Bordegoni M, Barone S*

- 16.45** INNOVATIVE POLYURETHANE FOAMS WITH THERMAL ENERGY STORAGE/RELEASE CAPABILITIES

*Valentini F, Dorigato A, Fiore V, La Gennusa M, Pegoretti A*

**17.00** MODELLING PENETRANT INDUCED TRANSITIONS IN THERMOPLASTIC POLYMERS

*Scherillo G, Musto P, Loiano V, Mensitieri G*

**17.15** DEVELOPMENT OF SMART FIBROUS MATS: AN INNOVATIVE COMBINED APPROACH BASED ON ENZYMES AND NATURAL EXTRACTS

*Cacciotti I, Parente A, Nocca G*

**17.30** CORE-SHELL UPCONVERSION NANOPARTICLES FOR IMAGING AND THERAPY

*Miletto I, Gionco C, Paganini MC, Giamello E, Marchese L, Gianotti E*

**17.45** EFFECTS OF THERMAL CYCLING ON NANO-SCALE ELASTIC MODULUS AND FRACTURE TOUGHNESS OF THERMAL BARRIER COATINGS

*Bemporad E, Bolelli G, Righi MG, Mughal MZ, Moscatelli R, Ligabue O, Antolotti N, Sebastiani, M, Lusvarghi L*

**18.00** A POROUS CARBON WITH EXCELLENT GAS STORAGE PROPERTIES FROM RECYCLED POLYSTYRENE

*Gatti G, Tei L, Mangano E, Brandani S, Cossi M, Marchese L*

**18.15** ASSEMBLEA AIMAT

## SALA NITRODI

### Sessione "Sintesi, caratterizzazione, modelling dei materiali"

ORAL

Chairman: Edoardo Bemporad

- 9.30** EFFECT OF NON-EQUILIBRIUM PROCESSING ON THE SYNTHESIS AND THERMOELECTRIC PROPERTIES OF  $\text{Yb}_x\text{Co}_4\text{Sb}_{12}$  SKUTTERUDITE AND  $\text{TiNiSn}$  HALF HEUSLER COMPOUND

*Castellero A, Aversano F, Ferrario A, Boldrini S, Fanciulli C, Baricco M*

- 9.45** STUDY OF CHEMICAL-PHYSICAL PARAMETERS AND OPTIMIZATION OF ZEOLITE-TYPE MATERIALS FOR POTENTIAL BIOMEDICAL APPLICATION IN INTOLLERANCE TO HEAVY METALS

*Quitadamo A, Marini D, Sambucci M, Ronci S, Ahaliabadeh Z, Saviano G, Santonicola MG, Bracciale MP, Santarelli ML, Scoppettuolo A, Manni A, Valente M*

- 10.00** APPLICABILITY EVALUATION OF NEW ALUMINA-ZIRCONIA-TITANIA CERAMIC COMPOSITE IN DENTAL APPLICATION

*Khaskhoussi A, Calabrese L, Currò M, Ientile R, Bouaziz J, Proverbio E*

**10.15** RELATIONSHIP BETWEEN CHEMICAL-PHYSICAL PROPERTIES OF GRAPHENE OXIDE AND PHOTO-STABILIZATION OF A POLYAMIDE 6

*Maio A, Fara P, Scaffaro R*

**10.30** CYTOTOXIC PERFORMANCES OF NEW ANIONIC CYCLOMETALATED Pt(II) COMPLEXES BEARING CHELATE O<sup>+</sup>O LIGANDS

*Ionescu A, Caligiuri R, Ferri N, Rimoldi I, Ricciardi L, La Deda M, Godbert N, Ghedini M, Aiello I*

## Sala Primavera: POSTER & Coffe Break

**11.15** THERMAL TREATMENT OF GOLD NANORODS: AN UNCONVENTIONAL WAY TO TUNE THE LONGITUDINAL PLASMONIC RESONANCE BAND

*Candrea A, Ricciardi L, Di Maio G, La Deda M*

**11.30** MEASURING THE VISCOELASTIC PROPERTIES OF A NOVEL BIOPOLYMER-BASED HYDROGEL IN COMPARISON WITH SOLUBLE FIBRES AND MASTICATED VEGETABLES

*Demitri C, Sannino A, Madaghiele M, Surano I, Panteca E, Chiquette E, Zohar Z, Ambrosio L*

**11.45** A SIMPLE AND STRAIGHTFORWARD APPROACH TO LIQUID RUBBER NBR NANOFIBERS VIA BLENDING WITH PCL DURING ELECTROSPINNING

*Giorgini L, Maccaferri E, Mazzocchetti L, Benelli T, Zucchelli A*

**12.00** MICRO-NANO SCALE CHARACTERIZATION OF THERMALLY TREATED SINGLE BASALT FIBRES

*Rossi E, Sebastiani M, Moscatelli R, Lilli M, Tirillò J, Sarasini F, Valente T, Bemporad E*

**12.15** SILICON NITRIDE SURFACE TEXTURING FOR BIOLOGICAL APPLICATIONS

*Marin E, Zanocco M, Boschetto F, Pezzotti G*

**12.30** HYBRID CATALYSTS BASED ON CARBENE ANCHORED ON INORGANIC SUPPORTS WITH HIERARCHICAL POROSITY

*Gianotti E, Miletto I, Paul G, Ivaldi C, Marchese L, Meazza M, Rios R, Raja R*

**12.45** A GREEN-MATERIALS APPROACH FOR THE SYNTHESIS AND CHARACTERIZATION OF SILICA GELS FOR HEAT PUMP APPLICATION

*Lachtar F, Khaskhoussi A, Calabrese L, Bouaziz J, Proverbio E*

## Sessione “Applicazioni tecnologiche, nuovi processi e nuova manifattura”

ORAL

Chairman: Gianluca Cicala

**16.00** DEVELOPMENT OF Al ALLOYS FOR ADDITIVE MANUFACTURING BY SINGLE SCAN TRACKS AND MELT SPINNING

*Lombardi M, Aversa A, Bosio F, Gianoglio D, Lorusso M, Manfredi D, Marola S, Baricco M, Battezzati L, Fino P*

**16.15** CORROSION BEHAVIOR OF LASER POWDER BED FUSION Ti<sub>6</sub>Al<sub>4</sub>V ALLOY FOR BIOMEDICAL PURPOSE

*Cabrini M, Lorenzi S, Pastore T, Testa C, Carugo F, Manfredi D, Lorusso M, Calignano F, Lombardi M*

**16.30** LOW-COST THERMOCHEMICAL HEAT STORAGE BY USING CEMENT-BASED COMPOSITE MATERIALS

*Pavese M, Lavagna L, Burlon D, Brancato V, Frazzica A, Chiavazzo E*

**16.45** COLLAGEN-BASED SUBSTRATES FOR URETHRAL REGENERATION

*Gallo N, Salvatore L, Ul Haq A, Lunetti P, Bettini S, Curci C, Sallustio F, Vulpi M, Capobianco L, Vitarelli A, Ditunno P, Valli L, Gallone A, Sannino A*

**17.00** EFFECT OF SUBSTRATE HARDNESS AND ROUGHNESS ON ADHESION OF COLD SPRAYED PARTICLES

*Puddu P, Bruera A, Theimer S, Villa-Vidaller M, Boielli G, Gärtner F, Klassen T, Lusvardi L*



**17.15** NEW GOLDSMITH WAYS (NGW) – SUSTAINABLE EVOLUTION IN THE GOLDSMITH 3D PRODUCTION CHAIN

*Moscatelli R, Bemporad E*

**17.30** EFFECT OF ZINC OXIDE DISTRIBUTION ON VULCANIZATION EFFICIENCY AND MECHANICAL PROPERTIES OF RUBBER NANOCOMPOSITES

*Mostoni S, Marano C, D'Arienzo M, Di Credico B, Susanna A, Scotti R*

**17.45** CAESIUM LEAD BROMIDE DEPOSITION VIA RF-MAGNETRON SPUTTERING: A NOVEL APPROACH TO INORGANIC PEROVSKITES THIN FILMS

*Caporali S, Borri C, Calisi N, Galvanetto E, Falsini N, Biccari F, Vinattieri A*

**18.00** DYNAMIC MECHANICAL CHARACTERIZATION TECHNIQUES APPLIED TO A VARIETY OF MATERIAL TYPES

*Haris M, Nickel T*

# MARTEDÌ 23 LUGLIO 2019

## SALA PITECUSA

### Sessione “L’ambiente, il costruito e la conservazione del patrimonio”

#### INVITED LECTURE

Chairman: Aldo Romani

- 9.00** BUILT HERITAGE PRESERVATION: AN OLD CHALLENGE  
FOR INNOVATIVE SOLUTIONS

*Toniolo L*

#### ORAL

Chairman: Luigi Coppola

- 9.30** AN EMPATHETIC ADDED SUSTAINABILITY INDEX (EASI)  
FOR CEMENTITIOUS BASED CONSTRUCTION MATERIALS

*Coffetti D, Coppola L, Crotti E, Pastore T*

- 9.45** STABILIZATION/SOLIDIFICATION TREATMENT OF  
CONTAMINATED SEDIMENTS FOR MARINE SITE  
REMEDICATION

*Todaro F, De Gisi S, Notarnicola M*

- 10.00** LAYERED MATERIALS AS PROMISING TUNABLE TOOLS FOR  
THE CLEANING OF SALT ENCRUSTATIONS AND  
BIODETERIORATED SURFACES

*Boccalon E, Pica M, Romani A, Casciola M, Nocchetti M*

**10.15** AN OVERVIEW ON THE MECHANICAL CHARACTERIZATION TESTS FOR FRCM SYSTEM

*Donnini J, Corinaldesi V*

**10.30** PERFORMANCE AND MICROSTRUCTURE OF ONE-PART ALKALI ACTIVATED SLAG CEMENTS: EFFECT OF ALKALI CONTENT

*Crotti E, Coppola L, Coffetti D, Candamano S, Crea F, Iorfida A, Pastore T*

## Sala Primavera: POSTER & Coffe Break

**11.15** BIO-POLYMERS BASED FILMS CONTAINING NATURALLY OCCURRING FILLERS AND ANTI-OXIDANTS FOR CULTURAL HERITAGE CONSERVATION: FORMULATION, CHARACTERIZATION AND DURABILITY

*Dintcheva NT, Lazzara G, Cavallaro G, Infurna G, La Mantia FP, Milioto S*

**11.30** POLY(HYDROXYALKANOATE)<sub>s</sub>-BASED HYDROPHOBIC COATINGS FOR THE PROTECTION OF STONE IN CULTURAL HERITAGE

*Fabbri P, Franzoni E, Degli Esposti M*

**11.45** MONITORING OF ATMOSPHERIC CORROSIVITY FOR CORRODED SURFACES OF CULTURAL HERITAGE: ER-BASED SENSORS FOR COPPER ALLOY OBJECTS

*Goidanich S, Petiti C, Toniolo L, Zanoni M, Faifer M*

**12.00** PROPERTIES AND DURABILITY OF BLENDED ALKALI-ACTIVATED BINDERS

*Candamano S, Crea F, Iorfida A*

**12.15** POLY-HYDROXYBUTYRATE (PHB) GREEN GELS FOR THE CLEANING OF PAINTINGS: ADVANCES TOWARDS SUSTAINABLE SOLUTIONS

*Prati S, Sciutto G, Yiming J, Blümich B, Focarete ML, Galletti P, Giorgini L, Gualandi C, Mazzocchetti L, Rehorn C, Samorì C, Tagliavini E, Mazzeo R*

**12.30** THE BIOCALCARENITE OF AGRIGENTO. A GREEN AND ECO-COMPATIBLE TREATMENT BASED ON THE USE OF AN AQUEOUS NANOLIME SUSPENSION

*Daniele V, Macera L, Taglieri G*

**12.45** SCALABLE AND SUSTAINABLE SYNTHESIS TO PRODUCE FERRIHYDRITE AND HEMATITE

*Macera L, Daniele V, Taglieri G*

## Sessione “Nuove funzionalità dei materiali”

### INVITED LECTURE

Chairman: Luca Lusvarghi

#### **15.30** CATALYSTS AND PROCESSES FOR A RENEWABLE ENERGY FUTURE

*Giambastiani G, Tuci G, Rossin A, Luconi L, Vizza F, Wang W, Filippi J, Pham-Huu C*

### ORAL

Chairman: Luca Lusvarghi

#### **16.00** NANOPOROUS GOLD: A TUNABLE MATERIAL FOR SERS AND ELECTROCHEMICAL APPLICATIONS

*Scaglione F, Rizzi P, Battezzati L*

#### **16.15** DEVELOPMENT OF ANTI-ICING COATINGS FOR WIND TURBINE BLADES

*Bolelli G, Dosta S, Garcia Cano I, Guilemany JM, Knuuttila J, Koivuluoto H, Lusvarghi L, Vuoristo P*

#### **16.30** BROAD-SPECTRUM ADSORBENTS FOR WATER PURIFICATION BASED ON COMPOSITE CHITOSAN HYDROGELS

*Filippone G, Salzano de Luna M*

**16.45** MICROENCAPSULATION OF DOCOSANE IN ORGANOSILICA SHELLS FOR STRUCTURAL COMPOSITES WITH THERMAL ENERGY STORAGE CAPABILITY

*Fredi G, Dirè S, Callone E, Ceccato R, Mondadori F, Pegoretti A*

## Sala Primavera: POSTER & Coffe Break

**17.30** STRONGER CARBON NANOTUBE NANOCOMPOSITES WITH ENHANCED DAMPING CAPABILITY

*Lanzara G, Talò M, Karimzadeh M, Bemporad E*

**17.45** STRETCHABLE REGENERATED SILK AS ARTIFICIAL MUCOSA HOSTING BIONIC YEAST CELLS FOR ELASTOMERIC ELECTRONICS

*Valentini L, Bittolo Bon S, Pugno NM*

**18.00** THERAPEUTIC/REGENERATIVE PROPERTIES OF EXFOLIATED BLACK PHOSPHORUS

*Raucci MG, Fasolino I, Caporali M, Soriente A, Serrano Ruiz M, Peruzzini M, Ambrosio L*

**18.15** ANTIBACTERIAL COATINGS FOR METAL IMPLANTABLE ORTHOPEDIC DEVICES

*Chiesa R, Moscatelli M, D'Agostino A, Rimondini L, Cochis A, Candiani G, De Nardo L*

DOMENICA 21 LUGLIO			LUNEDÌ 22 LUGLIO			
	<i>Sala Pitecusa</i>	<i>Sala Nitrodi</i>	<i>Sala Pitecusa</i>	<i>Sala Nitrodi</i>		
			INVITED	Juliano		
			ORALE_3_1	Ronca	ORALE_1_1	Castellero
			ORALE_3_2	Malara	ORALE_1_2	Quitadamo
			ORALE_3_3	Biffi	ORALE_1_3	Khaskhousi
			ORALE_3_4	Tosto	ORALE_1_4	Maio
			ORALE_3_5	Marini	ORALE_1_5	Ionescu
			<i>Sala Primavera</i>			
			Coffe break		POSTER SESSION	
			ORALE_3_6	Padovano	ORALE_1_6	Candrea
			ORALE_3_7	Tamburri	ORALE_1_7	Dinesti
			ORALE_3_8	Aversa	ORALE_1_8	Giorgini
			ORALE_3_9	Cicala	ORALE_1_9	Rossi
			ORALE_3_10	Tulliani	ORALE_1_10	Marin
			ORALE_3_11	Farina	ORALE_1_11	Gianotti
			ORALE_3_12	Sangermano	ORALE_1_12	Lachtar
15.30			INVITED	Dehm		
16.00	Registrazione dei partecipanti	Introduzione sul progetto RENDERING Federici	ORALE_1_13	Mauriello	ORALE_3_13	Lombardi
		Attività svolta dal progetto RENDERING Zanoletti/Aspi	ORALE_1_14	Mollica	ORALE_3_14	Cabrini
			ORALE_1_15	Tamburrino	ORALE_3_15	Pavese
			ORALE_1_16	F. Valentini	ORALE_3_16	Gallo
17.00		Attività 2° anno progetto RENDERING Bontempi	ORALE_1_17	Scherillo	ORALE_3_17	Puddu
17.15	Apertura dei lavori e saluti di benvenuto	<i>Sala Primavera</i> Coffe break	ORALE_1_18	Cacciotti	ORALE_3_18	Moscatelli
17.30	PLENARY Pettinari	Presentatione progetto Sludge 4.0 Caneschi	ORALE_1_19	Miletto	ORALE_3_19	Mostoni
18.00	PLENARY La Mantia		ORALE_1_20	Bemporad	ORALE_3_20	Caporali
18.20	PLENARY Nicolais		ORALE_1_21	Gatti	ORALE_3_21	Haris
18.30		Tavola rotonda Valento/Cigada/ Caneschi/Nicola/ Pettinari				
19.45		Conclusioni Bontempi/Valente				
			ASSEMBLEA AIMAT			

**WELCOME PARTY**

- Sessione 1** Sintesi, caratterizzazione, modelling dei materiali
  - Sessione 2** Nuove funzionalità dei materiali
  - Sessione 3** Applicazioni tecnologiche, nuovi processi e nuova manifattura
  - Sessione 4** Progettazione sostenibile e ciclo di vita dei materiali
  - Sessione 5** L'ambiente, il costruito e la conservazione del patrimonio
- PROGETTO RENDERING**

MARTEDÌ 23 LUGLIO				MERCOLEDÌ 24 LUGLIO			
<b>Sala Pitecusa</b>		<b>Sala Nitrodi</b>		<b>Sala Pitecusa</b>			
9.00	INVITED	Toniolo		9.00	INVITED	De Gaudenzi	
9.15				9.15			
9.30	ORALE_5_1	Coffetti	ORALE_3_22	Deambrosio	9.30	ORALE_4_1	Barbi
9.45	ORALE_5_2	Todaro	ORALE_3_23	Ognibene	9.45	ORALE_4_2	Assi
10.00	ORALE_5_3	Boccalon	ORALE_3_24	Testa	10.00	ORALE_4_3	Di Mundo
10.15	ORALE_5_4	Donnini	ORALE_3_25	Palmieri	10.15	ORALE_4_4	Montorsi
10.30	ORALE_5_5	Crotti	ORALE_3_26	Jozwiak	10.30	ORALE_4_5	Pietroluongo
	<b>Sala Primavera</b>			10.45	ORALE_4_6	Scarfato	
	Coffe break	POSTER SESSION		11.00	ORALE_4_7	Rizzarelli	
11.15	ORALE_5_6	Dintcheva	ORALE_2_1	Mobili	11.15	ORALE_4_8	Zanoletti
11.30	ORALE_5_7	Fabbri	ORALE_2_2	Gandin	11.30	ORALE_4_7	Cigada
11.45	ORALE_5_8	Goidanich	ORALE_2_3	Dorigato			
12.00	ORALE_5_9	Candamano	ORALE_2_4	Lazzeri	11.45	Chiusura Lavori	
12.15	ORALE_5_10	Prati	ORALE_2_5	Giosuè			
12.30	ORALE_5_11	Daniele	ORALE_2_6	Milanese			
12.45	ORALE_3_27	Macera	ORALE_2_7	Janner			
15.30	INVITED	Giambastiani					
15.45							
16.00	ORALE_2_8	Scaglione	ORALE_1_22	Lusvarghi			
16.15	ORALE_2_9	Boelli	ORALE_1_23	Baricco			
16.30	ORALE_2_10	Filippone	ORALE_1_24	Cassani			
16.45	ORALE_2_11	Fredi	ORALE_1_25	Sambucci			
	<b>Sala Primavera</b>						
	Coffe break	POSTER SESSION					
17.30	ORALE_2_12	Lanzara	ORALE_1_26	Pilot			
17.45	ORALE_2_13	L. Valentini	ORALE_1_27	Torcasio			
18.00	ORALE_2_14	Raucci	ORALE_1_28	Agnelli			
18.15	ORALE_2_15	Chiesa	ORALE_1_29	Gargiulo			
18.30	ORALE_2_16	Cannillo	ORALE_1_30	Mazzanti			
18.45	ORALE_2_17	Altomare	ORALE_1_31	Genova			

**CENA SOCIALE**



**18.30** NEW BIOACTIVE GLASSES WITH IMPROVED  
PERFORMANCE

*Cannillo V, Bellucci D*

**18.45** PLANT DERIVED CELLULOSE SCAFFOLDS FOR HUMAN  
TISSUES REGENERATION

*Altomare L, Contessi Negrini N, Toffoletto N, Farè S*

## SALA NITRODI

### Sessione “Applicazioni tecnologiche, nuovi processi e nuova manifattura”

ORAL

Chairman: Andrea Caneschi

**9.30** ADVANCED COATINGS VIA HIGH POWER IMPULSE  
MAGNETRON SPUTTERING

*Deambrosis SM, Fabrizio M, Montagner F, Zin V*

**9.45** FUNCTIONAL ELECTROSPUN VEILS: APPLICATION FROM  
WOUND HEALING TO FRP COMPOSITES

*Ognibene G, Tosto C, Li Volti G, Fragalà ME, Saitta L, Cicala G*

**10.00** DEVELOPMENT OF W-FREE THERMAL SPRAY COATINGS  
BASED ON TiC-NiCr

*Testa V, Bolelli G, Colella A, Lusvarghi L, Morelli S, Puddu P,  
Righetti E, Sassatelli P*

**10.15** CELLULOSE RECOVERY FROM WASTEWATER:  
PERFORMANCES ASSESSMENT AND POSSIBLE  
IMPLEMENTATION IN CONSTRUCTION INDUSTRY

*Palmieri S, Cipolletta G, Pastore C, Giosuè C, Eusebi AL,  
Frison N, Tittarelli F, Fatone F*

**10.30 ZnO-BASED SELECTIVE HYDROGEN SENSORS FOR THE ETHANOL STEAM REFORMING PROCESS**

*Jozwiak E, Moulaei K, Neri G*

## Sala Primavera: POSTER & Coffe Break

### Sessione “Nuove funzionalità dei materiali”

**INVITED LECTURE**

Chairman: Paolo Fornasiero

**11.15 CARBON-BASED FILLERS AND FIBERS FOR ELECTRICALLY CONDUCTIVE CEMENT MORTARS**

*Mobili A, Bellezze T, Revel GM, Tittarelli F*

**11.30 BIOMATERIALS AND ENGINEERED MICROENVIRONMENTS TO CONTROL CELL BEHAVIOUR**

*Gandin A, Gambetta A, Panciera T, Totaro A, Citron A, Piccolo S, Brusatin G*

**11.45 NOVEL EPOXY-CYCLOOLEFIN COPOLYMER BLENDS WITH SELF HEALING CAPABILITY**

*Dorigato A, Mahmood H, Pegoretti A*

**12.00 CHARACTERIZATION OF TOPAS® FOR THE DESIGN OF AN INSULIN RESERVOIR IN A ROBOTIC IMPLANT**

*Lazzeri A, D'Ambrosio R, Panariello L, Ricci C, Sandroni M, Barbani N, Cristallini C, Danti S, Cinelli P*

**12.15** HIGH-TEMPREATURE PERFORMANCE OF CEMENTITIOUS  
AND ALKALI ACTIVATED LIGHTWEIGHT MORTARS

*Giosuè C, Mobili A, Tittarelli F*

**12.30** SPECIALTY OPTICAL FIBERS FOR REMOTE SENSING AND  
BIOMEDICINE

*Milanese D, Pugliese D, Boetti NG, Lousteau J, Gallichi-  
Nottiani D, Janner D*

**12.45** NANOSTRUCTURED GOLD SURFACE FOR LOW-COST  
DETECTION OF CONTAMINANTS IN WATER USING SERS

*Janner D, Marino A, Muzi E*

## Sessione "Sintesi, caratterizzazione, modelling dei materiali"

ORAL

Chairman: Edoardo Bemporad

**16.00** HIGH-ENTROPY ALLOY (HEA) THIN FILMS: SYNTHESIS AND CHARACTERIZATION

*Lusvardi L, Boelli G, Togni A, Xia A, Franz R*

**16.15** COMPLEX HYDRIDES FOR ENERGY STORAGE

*Baricco M, Dematteis E, Gulino V, Barale J, Berti N, Nervi C, Rizzi P*

**16.30** SUPPORTED NANOPARTICLES FOR CATALYSIS AND BIOMEDICAL APPLICATIONS

*Cassani MC, Ballarin B, Nanni D, Parise C, Bigi A, Boanini E*

**16.45** GREEN CEMENT-BASED MATERIALS FOR 3D PRINTING: PRELIMINARY TESTS AND CHARACTERIZATION

*Sambucci M, Merlonetti G, Sibai A, Corinaldesi V, Valente M*

## Sala Primavera: POSTER & Coffe Break

**17.30** IN SILICO STARK EFFECT: DETERMINATION OF EXCITED-STATE POLARIZABILITIES OF SQUARINE DYES

*Pilot R, Orian L, Bozio R*

- 17.45** MULTIFUNCTIONAL NANOSTRUCTURED PLA-BASED MATERIALS FOR BIOLOGICAL INVESTIGATIONS  
*Torcasio SM, Piperno A, Mineo PG, Coulembier O, Scala A*
- 18.00** SIMPLE ASSESMENT OF FRACTURE RESISTANCE IN SOFT ELASTIC MATERIALS  
*Agnelli S, Bignotti F, Balasooriya W, Schritteser B*
- 18.15** TOWARDS THE DEVELOPMENT OF NOVEL CONDUCTIVE BIOINTERFACES INSPIRED BY NATURE: SYNTHESIS AND CHARACTERIZATION OF GRAPHENIC EUMELANIN-BASED HYBRIDS  
*Gargiulo V, Alfè M, di Capua R, Pezzella A*
- 18.30** MECHANICAL PROPERTIES OF RUBBER TOUGHENED WOOD POLYMER COMPOSITES IN WET ENVIRONMENT  
*Mazzanti V, Cavalcoli V, Balbo A, Mollica F*
- 18.45** ELECTROLESS METAL PLATING FOR HIGH TEMPERATURE APPLICATIONS  
*Genova V, Paglia L, Bartuli C, Marra F, Pulci G, Valente T*

**CENA SOCIALE**

# MERCOLEDÌ 24 LUGLIO 2019

## SALA PITECUSA

### Sessione “Progettazione sostenibile e ciclo di vita dei materiali”

#### INVITED LECTURE

Chairman: Domenico Caputo

**9.00** AN ITALIAN EXAMPLE OF CIRCULAR ECONOMY IN THE INDUSTRIAL PRODUCTION OF HARDMETALS

*De Gaudenzi GP, Marcheselli GC*

#### ORAL

Chairman: Angela Serpe

**9.30** RATIONAL AND ECO DESIGN OF BIO-BASED PLASTIC FROM HERMETIA ILLUCENS PREPUPAE’S PROTEINS FOR AGRICULTURAL PURPOSE

*Barbi S, Messori M, Ferrari AM, Manfredini T, Montorsi M*

**9.45** USE OF PILOT-PLANT FOR STABILIZATION: CO-COMBUSTIONE OF SEWAGE SLUDGE AND MUNICIPAL SOLID WASTE INCINERATION FLY ASH

*Assi A, Bilo F, Zanoletti A, Zacco A, Bontempi E*

**10.00** TAILORING ADDED VALUE CEMENT MORTARS WITH RECYCLED TYRE RUBBER

*Di Mundo R, Labianca C, Petrella A, Notarnicola M*

- 10.15** DESIGN OF A NEW CONTROLLED RELEASE NPK FERTILIZER IN CIRCULAR ECONOMY PERSPECTIVE  
*Montorsi M, Barbi S, Andreola NMF, Manfredini T, Barbieri L*
- 10.30** MECHANICAL RECYCLING OF AN END-OF-LIFE AUTOMOTIVE COMPOSITE COMPONENT  
*Pietroluongo M, Padovano E, Frache A, Badini C*
- 10.45** PRELIMINARY STUDY ON THE PRODUCTION OF PIPES USING HETEROGENEOUS RECYCLED PLASTICS FROM FLEXIBLE PACKAGING WASTE  
*Scarfato P, Garofalo E, Di Maio L, Protopapa A, Incarnato L*
- 11.00** EVALUATING MULTIPLE TEXTURE PROPERTIES OF GELATINES BY COMBINING A NEW 3D PRINTED TOOL AND A UNIVERSAL TESTING MACHINE  
*Rizzarelli P, Rapisarda M, Valenti G, Carbone DC, Recca G*
- 11.15** A NOVEL GREEN METHOD FOR HEAVY METAL STABILIZATION BASED ON SEWAGE SLUDGE ASH RECOVERY  
*Zanoletti A, Benassi L, Depero LE, Bontempi E*
- 11.30** POLY-PAPER & SHOCK.PAPER: THE PLASTIC MADE OF PAPER  
*Cigada A, Santi R, Del Curto B, Faré S*
- 11.45** CHIUSURA LAVORI



# POSTER

## Sessione “Sintesi, caratterizzazione, modelling dei materiali”

**P\_1\_1** CHEMICAL CHARACTERIZATION OF SLUDGE CO-INCINERATION IN MUNICIPAL SOLID WASTE INCINERATOR

*Zanoletti A, Dalipi R, Bilo F, Bosetti G, Depero LE, Bontempi E*

**P\_1\_2** EFFECT OF CROSSLINKING PROCESS PARAMETERS ON THE RHEOLOGICAL BEHAVIOR OF A POLYDIMETHYLSILOXANE

*Bardelli T, Briatico Vangosa F, Marano C*

**P\_1\_3** INNOVATIVE ANTIFOULING COATINGS: AN ECOSUSTAINABLE AND GREEN APPROACH

*Cacciotti I, Scognamiglio V, Antonacci A, Guarino S*

**P\_1\_4** SYNTHESIS AND INVESTIGATION OF CROCONATE-BASED DYES AS SMART ORGANIC COATING FOR NOBLE METALS NANOSTRUCTURES

*Cogliati B, Arduini A, Secchi A*

**P\_1\_5** THERMALLY CONDUCTIVE PA6-BN COMPOSITES VIA ADDITIVE LAYER MANUFACTURING

*Lamastra FR, Bragaglia M, Franceschetti F, Russo P, Rinaldi M, Fabbrocino F, Nanni F*

**P\_1\_6 ELECTROSPUN OXIDE MATERIALS FOR MONITORING POLLUTION**

*Frontera P, Malara A, Donato A, Mauriello F, Bonaccorsi L*

**P\_1\_7 NITROGEN-RICH STAINLESS STEEL THIN FILMS OBTAINED BY MAGNETRON SPUTTERING**

*Galvanetto E, Calisi N, Borri C, Caporali S, Bacci T, Cini A, Borgioli F*

**P\_1\_8 GREEN COMPOSITES BASED ON PLA AND *OPUNTIA FICUS INDICA* NATURAL FILLER**

*Gulino EF, Scaffaro R, Maio A*

**P\_1\_9 DESIGN OF A NOVEL COMPOSITE 3D PRINTED CRANIAL IMPLANT: AN INNOVATIVE PROMISING STRATEGY**

*Lazzarini L, Papa V, Cacciotti I*

**P\_1\_10 PREPARATION AND CHARACTERIZATION OF POLYLACTIC ACID/SILICA AND POLYLACTIC ACID/CLAYS BIONANOCOMPOSITE ELECTROSPUN SYSTEMS**

*Lopresti F, Carfi Pavia F, La Carrubba V, Brucato V, Ceraulo M, Kersaudy-Kerhoas M*

**P\_1\_11 STUDY OF A POROUS MAGNESIA-BASED CEMENT**

*Malchiodi B, Barbieri V, Gualtieri M, Siligardi C, Manfredini T*

**P\_1\_12 STUDY OF THE ROLE OF CAFFEINE IN VULCANIZATION PROCESS OF RUBBER COMPOUNDS AS A SUSTAINABLE PERSPECTIVE OF USING COFFEE INDUSTRY BY PRODUCTS**

*Nanni F, Lamastra FR, Bragaglia M, Cherubini V*

**P\_1\_13** COMPOSITE NANOFIBERS FOR THE DETECTION OF METALLIC IONS IN SOLUTION

*Paone E, Malara A, Frontera P, Aloisi GD, Caneschi A*

**P\_1\_14** CO-EXTRUSION OF MULTI-LAYER BIODEGRADABLE FILMS FOR THE RELEASE OF NATURAL ANTIMICROBIAL AGENTS

*Scaffaro R, Maio A, Gulino EF*

**P\_1\_15** HOST-GUEST CHEMISTRY OF CALIXARENE-DECORATED METAL NANOPARTICLES

*Secchi A, Cogliati B, Arduini A*

**P\_1\_16** INJECTION REACTIVE PA6 MOULDING: EFFECT OF MOULD TEMPERATURE ON POLYMER CHARACTERISTICS

*Valente M, Marini D, Quitadamo A, Sambucci M, Lucignani V, Bracciale MP, Santarelli ML*

## Sessione “Nuove funzionalità dei materiali”

**P\_2\_1** PROCESS FOR THE DISPOSAL OF SEWAGE SLUDGE FROM CIVIL AND/OR INDUSTRIAL WASTEWATER AND INERT SOLID MATERIAL OBTAINED FROM COMBUSTION ASH

*Zanoletti A, Assi A, Bilo F, Dalipi R, Depero LE, Bontempi E, Nenci M*

**P\_2\_2** ECOAT: INNOVATIVE AND SUSTAINABLE BIO-BASED COATINGS FOR BIOBASED PRODUCTS

*D'ambrosio R, Panariello L, Coltelli MB, Cinelli P, Lazzeri A*

**P\_2\_3 SOLUTION PROCESSED NANOSTRUCTURED MATERIALS FOR FUNCTIONAL APPLICATIONS**

*Martucci A, Colusso E, Rigon M, Del Col D, Omenetto F*

**P\_2\_4 BIONTOP: INNOVATIVE MATERIALS BASED ON PLA FOR SUSTAINABLE PACKAGING**

*Panariello L, D'ambrosio R, Cinelli P, Coltelli MB, Lazzeri A*

**P\_2\_5 COMPOSITE MATERIALS BASED ON (CYMENE)RU(II) CURCUMIN ADDITIVES LOADED ON POROUS CARBON ADSORBENTS**

*Pettinari R, Pettinari C, Marchetti F, Di Nicola C*

**Sessione “Applicazioni tecnologiche, nuovi processi e nuova manifattura”**

**P\_3\_1 INFLUENCE OF THE PROCESSING PARAMETERS ON THE MECHANICAL AND MORPHOLOGICAL PROPERTIES OF PETG AND PLA 3D PRINTED BACK BRACE FOR MEDICAL APPLICATIONS**

*Abbate V, Redaelli D, Storm F, Ronca A, Sorrentino A, De Capitani C, Fraschini P, Ambrosio L*

**P\_3\_2 A NEW METHOD FOR STABILIZATION OF MUNICIPAL SOLID WASTE INCINERATION FLY ASH: THE PILOT-PLANT**

*Assi A, Bilo F, Zanoletti A, Zacco A, Bontempi E*

**P\_3\_3 ELECTROSPUN NANOCOMPOSITE FIBERS LADEN WITH BACTERIOSTATIC AGENTS**

*Basoli F, Ditaranto N, Trombetta M, Cioffi N, Rainer A*

**P\_3\_4 PHYSICAL VAPOUR DEPOSITION (PVD) VERSUS ELECTROCHEMICAL DEPOSITION: AN ANALYSIS ON THE TWO PROCESSES PERFORMED BY MEANS OF A CHEMICAL PHYSICAL CHARACTERISATION OF THE THIN FILMS**

*Caneschi A, Briganti M, Berretti E, Borri C, Capozzoli L, Cini A, Fantechi E, Giaccherini A, Innocenti M, Lavacchi A*

**P\_3\_5 ACETATE CELLULOSE AS POLYMER FOR SEED COATING APPLICATION**

*Friuli M, Prete A, Cafuero L, Zafar MS, Demitri C, Madaghiele M, Sannino A*

**P\_3\_6 DIRECT METALLIC COVERING FIBER PROCESS: FIRST STUDY AND PRELIMINARY APPROACH**

*Marra F, Marini D, Biscaglia F, Lüking A, Becker T, Pico D, Gries T, Valente M*

**P\_3\_7 INFORMED ADDITIVE MANUFACTURING TEACHING AND RESEARCH BASED ON MATERIALS DATA**

*Masi L, Zhu D, Martin N*

**P\_3\_8 HIGH-TEMPERATURE EROSION OF SUSPENSION PLASMA SPRAYED THERMAL BARRIER COATINGS**

*Morelli S, Antolotti N, Bolelli G, Ligabue O, Lusvarghi L, Marra F, Puddu P, Pulci G, Sarasini F, Testa V*

**P\_3\_9 SPECTROSCOPIC AND ELECTROCHROMIC CHARACTERIZATION OF A FLEXIBLE FILMS BASED ON VIologen OR POLYANILINE**

*Parisi F, Candreva A, La Deda M*

**P\_3\_10 SOL-GEL SYNTHESIS OF MATERIALS IN THE SYSTEM  $TiO_2/SiO_2/GAMA Fe_2O_3$  AND THEIR APPLICATION IN PHOTOACTIVITY OF TITANIUM STRUCTURES**

*Pedefferri MP, Mokhtarifar M, Kaveh R, Dimanti MV*

**P\_3\_11 DEVELOPMENT AND OPTIMIZATION OF NEW METHODOLOGIES FOR HIGH TEMPERATURE MICROWAVE PROCESSING OF SIC-BASED CERAMIC MATRIX COMPOSITES**

*D'Ambrosio R, Annino G, Panariello L, Lazzeri A*

**P\_3\_12 AMCRA PROJECT: ADDITIVE MANUFACTURING OF VALVES IN ALLOY 625 FOR OIL&GAS SERVICE**

*Testa C, Cabrini M, Lorenzi S, Carugo F, Pastore T, Brevi F, Biamino S, Fino P, Manfredi D, Marchese G, Calignano F, Scenini F*

## Sessione “Progettazione sostenibile e ciclo di vita dei materiali”

### **P\_4\_1 SEWAGE SLUDGE ASH RECOVERY FOR HEAVY METALS STABILIZATION PROCESS**

*Zanoletti A, Assi A, Benassi L, Bilo F, Dalipi R, Depero LE, Bontempi E*

### **P\_4\_2 EFFECT OF DIFFERENT CELLULOSE PARTICLES ON THE PROPERTIES OF BIODEGRADABLE POLYMER COMPOSITES**

*Botta L, Mistretta MC, Titone V, La Mantia FP, Bruno M, Rosselli S, Modica A, Sottile F*

### **P\_4\_3 REUSE OF WASTE AUTOCLAVED AERATED CONCRETE GRANULATES IN GYPSUMBASED BUILDING MATERIALS**

*Campanile A, Iucolano F, Liguori B, Caputo D*

### **P\_4\_4 SUSTAINABLE HEMP-FIBER REINFORCED INORGANIC FOAMS**

*Galzerano B, Liguori B, Barra G, Verdolotti L*

### **P\_4\_5 RECOVERY OF COBALT FROM “HARD METAL” (WC-CO) WASTES USING MALEIC ACID: A NEW SUSTAINABLE APPROACH**

*Oumarou Amadou A, De Gaudenzi GP, Marcheselli GC, Piredda M, Serpe A*

## Sessione “L’ambiente, il costruito e la conservazione del patrimonio”

**P\_5\_1** URBAN MINING OF WASTE-TO-ENERGY RESIDUES FOR A ZERO-WASTE APPROACH IN MUNICIPAL SOLID WASTE INCINERATION

*Assi A, Bilo F, Zanoletti A, Ponti J, Valsesia A, La Spina R, Zacco A, Bontempi E*

**P\_5\_2** DEVELOPMENT AND ASSESSMENT OF RESTORATION TECHNIQUES BASED ON INNOVATIVE MATERIALS

*Ceraulo M, Teresi R, Botta L, La Mantia FP, Scaffaro R*

**P\_5\_3** ECOSUSTAINABLE PROTECTIVE AND PHOTOCATALITIC COATINGS FOR CULTURAL HERITAGE

*D’Agostino G, Sassolini A, Cacciotti I*

**P\_5\_4** COMPOSITIVE AND NANOMECHANICAL CHARACTERIZATION OF ANCIENT FRESCOS IN CULTURAL HERITAGE PRESERVATION

*De Felicis D, Moscatelli R, Bemporad E*

**P\_5\_5** CHARACTERIZATION AND RECOVERY OF JORDAN EARTHEN BUILDINGS: PRELIMINARY RESULTS

*Gualtieri S, Conte S, Macchiarola M*

**P\_5\_6** ELECTROCHEMICAL DETECTION OF SULPHATE IONS FOR MONITORING OF DURABILITY OF CONCRETE STRUCTURES

*La Mantia FP, Ceraulo M, Inguanta R, Mulone A, Giarrusso R*



**P\_5\_7 BIODEGRADABLE POLYMERS AS POTENTIAL NEW  
MATERIALS IN THE CULTURAL HERITAGE CONSERVATION  
FIELD**

*Mistretta MC, Morreale M, La Mantia FP, Titone V, Botta L,  
Megna B, Ceraulo M*

# NOTE







