

PROGRAM

	Wednesday, June 27 th			Thursday, June 28 th			Friday, June 29 th		
8:00-9:00	Registration			Registration			Registration		
9:00-9.40	PLENARY LECTURE: Prof. Jackie Ying			PLENARY LECTURE: Prof. R. Müller			PLENARY LECTURE: Prof. N.Pugno		
9:40-11:00	Nanoscale mechanical characterization	3D-printing 1	Multiscale	Bio-inspired materials 1	Mechanics of tissue and biomaterials 1	Medical devices	AIAS group 1	Mechanics of extreme materials	Bio-inspired materials 2
11:00-11:30	COFFEE BREAK			COFFEE BREAK			COFFEE BREAK		
11:30-13:00	Electrospinning	3D-printing 2	Composites	Bio-inspired interfaces	Mechanics of tissue and biomaterials 2	Multiscale chaacterization of bone and bones	AIAS group 2	Smart sensors	Bio-inspired materials 3
13:00-14:15	LUNCH			LUNCH			LUNCH		
14:15-14:30	Ciao-Tech:The EU–Health Innovation Marketplace			14:20-15:10	PLENARY LECTURE: Prof. T. Webster		14:15-14:30 Closing Cerimony		
14:30-16:00	Medical coatings	3D-printing 3		15:10-16:30	Poster session				
16:00-16:30	COFFEE BREAK								
16:30-17:50	Mechanical Behaviour	3D-printing 4		16:30-22:00 GALA DINNER AT VILLA MONASTERO (LAKE COMO)					
	18:00-20:30 WELCOME PARTY								

BL.27.04: Plenary lectures & Sessions

BL.27.05: Sessions

BL.27.06: Sessions

Wednesday, June 27th

8:00-8:45

Registration

8:45-9:00

OPENING CERIMONY (BL.27.04)

9:00-9:40

PLENARY LECTURE (BL.27.04): Prof. Jackie Ying

9:40-11:00

Nanoscale Mechanical Characterization (BL.27.04)

Chairman (M. Rossi)

90: Alexander Dulebo; *"Fast, accurate and reproducible mechanical characterization of biomaterials using atomic force microscopy"*

119: K.Mouglin, P.Bauer, D. Faye, V.Vignal, A.Buch; *"Gold flower-like structures: excellent candidates as biosensors"*

73: G. Serino, A. Audenino; *"Impact of viscous phenomena in nanoindentation tests of dental cement composites"*

137: L. Angeloni, M. Reggenti, D. Passeri, M. Rossi; *"Nanomechanical characterizations of biomaterials using atomic force microscopy"*

3-D printing 1 (BL.27.05)

Chairman:

118: I. Ferrer, J.A. Méndez, M.L. Garcia-Romeu, M. Delgado-Aguilar; *"Biocompatible polymeric blends to manufacture micro plates by ultrasonic microinjection molding"*

107: M. Mannisi, R. Ferrante, D. Bianchi; *"Personalised 3D printed foot orthotics: from data acquisition to production"*

102: Pooja Bhati, Naresh Bhatnagar; *"Effect of processing parameter on the mechanical behavior of porous PLA tubular scaffold"*

100: M.L. Garcia-Romeu, I. Bagudanch, G. Palumbo, A. Cusanno, T. Villa, S. Farè; *"Single Point Incremental Forming and Electrospinning to produce biodegradable magnesium (AZ31) biomedical prostheses coated with porous PCL"*

Multiscale modeling (BL.27.06)

Chairman:

76: Anna Tarakanova, Giselle C. Yeo, Clair Baldock, Anthony S. Weiss, Markus J. Buehler; *"Molecular models of elastin structure in health and disease"*

135: Gabriele Grezzana, Flavia Libonati and , Admir Masic; *"Multimodal and multiscale modeling of bone microstructure"*

124: Andre E. Vellwock, Laura Vergani and Flavia Libonati; *"Understanding the mechanical behavior of a bone-inspired composite material with an XFEM approach"*

136: M. Mirzaali; *"Biomimetic soft-hard interfaces"*

11:00-11:30

COFFEE BREAK

11:30-13:00

Electrospinning (BL.27.04)

Chairman:

112: G. Suarato, M.Contardi, C.Pignatelli, G.Caputo, G.Perotto, J.A.Heredia-Guerrero, R.Bertorelli, A.Athanassiou; *Wool keratin as a naturally-derived biomaterial: structure-property relationships*

117: R. Castagna; P. Colnago; S. Donini; E. Parisini, C. Bertarelli; *Biohybrid electrospun membranes for chemical filtration*

128: Violeta-Carolina Niculescu, Gabriela Paun, Viorica Parvulescu; *Mesoporous silica – support for organometallic complex and its enzymes activity inhibition properties.*

3-D printing 2 (BL.27.05)

Chairman:

64: M. Invernizzi, R. Suriano, S. Turri and M. Levi; *Processability of 4D printable modified polycaprolactone with self-healing abilities*

42: M. Dallago, S. Raghavendra, V. Luchin, F. Zappini, D. Pasini, V. Fontanari, M. Benedetti; *Effect of the printing accuracy on the mechanical performance of SLM cellular structures for biomedical implants.*

122: A.G.Demir; *Single track deposition study of biodegradable Mg-rare earth alloy by micro laser metal wire deposition.*

70: F. Scocozza; S. Marconi; V. Fantini; M. Bordoni; C. Cereda; F. Auricchio; M.Conti; *3D printing of hydrogel-based bio-ink: a protocol for parameter setting and effectiveness evaluation*

Composites (BL.27.06)

Chairman:

75: Fabrizio Cuzzocrea, Matteo Ghiara, Stefania Marconi, Roberto Vanell; *3-D printing, hadrontherapy and carbon fiber devices in vertebral oncologic surgery*

95: W. Matysiak, T. Tański; *The electrospun 1D nanomaterials and their application possibilities.*

52: R.Scholz; M.Langhansl; C.Zollfrank; F.Walther; *Experimental study on the actuation and fatigue behavior of the biopolymer composite Cottonid.*

13:00-14:15

LUNCH

14:15-14:30

14:30-16:00

Medical coatings (BL.27.04)

Chairman:

108: M.V. Diamanti, A. Brenna, M. Ormellese; B. Del Curto; MP. Pedeferra *"Nanostructuring the surface of titanium by anodic oxidation for biomedical applications"*

116: F.Tana F, E.De Giglio, S.Cometa, F.Variola; R.Chiesa; L.De Nardo: *Calcium doped mesoporous zirconia coatings: the effect of surface chemistry and nanopatterning for biomedical application*

125: A. Patelli, F. Mussano, P. Brun, T. Genova, E. Verga, E. Ambrosi, T. Michieli, M. Scatto, G. Mattei, P. Scopece: *Surface functionalisation, nanoroughness and drug delivery by atmospheric plasma jet on scaffolds.*

103: Azzi M; Moscatelli M; Cochis A; Azzimonti B; Rimondini L; Chiesa R: *Biocompatible antibacterial*

3-D printing 3 (BL.27.05)

Chairman:

059 (keynote): M. Amini; D. Pahr: *Influence of size-scaling on the mechanical behavior of printed bone microstructure.*

058: F. Bini; R. Guachi; P. Marconato; C. Del Gaudio; F. Marinozzi: *Combining Additive Manufacturing and Computational Fluid Dynamics to Optimize Scaffold Design: a Preliminary Study*

087: G. De Pasquale, F. Luceri, M. Riccio: *Experimental validation of Ti6Al4V bio-inspired cellular structures from additive manufacturing processes*

086: G. De Pasquale, L. Scaltrito, V. Bertana, L. Zappulla: *Numerical and experimental evaluation of SLA polymers adhesion for innovative bio-MEMS.*

	<i>treatment for implantable titanium alloys</i>	
16:00-16:30	COFFEE BREAK	
16:30-18:00	<p>Mechanical behavior (BL.27.04) Chairman: 083: Majid R. Ayatollahi; S. Ghoul; <i>"Fracture analysis of dental restorative bio-composites using a strain-based fracture model"</i> 044: Rahul Roy and Dr. Velchuri Sairam; <i>"Effect of Silica Fume and Foundry waste sand on strength characteristics of Geogrid and Ferro cement panel"</i> 110: R. Basan; T. Marohnic; M. Franulovic; <i>"Possibilities of application of artificial neural networks for biological and nonconventional materials"</i>.</p>	<p>3-D printing 4 (BL.27.05) Chairman: 071: G. Marchiori; M. Berni; M. Boi; M. Petretta; C. Gualandi; D. Bellucci; M.C. Maltarello; M. Bianchi; <i>"Design of composition and geometry of novel 3d printed pcl/ bioactive glass scaffolds for bone tissue engineering"</i> 054: I.Genta, E.Chiesa, D.Pasini, R.Dorati, T.Modena, F.Scocozza, M.Conti, F.Auricchio, B.Conti; <i>"gPoly(gamma-glutamic acid) based hydrogels for 3D bioprinting"</i> 050: Kwang Seon Shin; <i>"Processing and Characterization of Biodegradable Magnesium Alloys"</i> 040: P. Bhati ,A. Srivastava, R. Ahuja, N. Bhatnagar; <i>"Effect of PCL and UV Irradiation on the Surface Hydrophilicity of PLA Tubes"</i> 099: V. Fantini; M. Bordoni; F. Scocozza; M. Conti; O. Pansarasa; S. Marconi; F. Auricchio; C. Cereda; <i>"New 3D in vitro model for the study of neurodegeneration"</i></p>
18:00-20.00	WELCOME PARTY	

Thursday, June 28th

8:00-16:00

Registration

9:00-9:40

PLENARY LECTURE (BL.27.04): Prof. Ralph Mueller

9:40-11:00

Bio-inspired materials 1 (BL.27.04)

Chairman:

88: F. Furlani, P. Sacco, M. Cok, F. Asaro, E. Marsich, D. Cojoc, S. Paoletti, I. Donati; *"Mimicking biological mechanical behavior by a bioactive lactose-modified chitosan"*

97: Pablo Zavattieri; *"Translating architectural features and clever mechanisms from Nature to biomimetic materials"*

96: I. Su, Z. Qin, T. Saraceno, M.J. Buehler; *"Construction and mechanical analysis and of a 3D spider-web model"*

79: M. Alfano, L. Bruno, C. Morano, M. Muzzupappa, L. Pagnotta; *"Analysis of crack trapping at bio-inspired interfaces obtained by additive manufacturing"*

91: A. Bahmani; TL. Willett; J. Montesano; *"Generating realistic representative microstructures of biomimetic composite materials for computational assessment of mechanical properties"*

Mechanics of tissue and biomaterials 1 (BL.27.05)

Chairman:

78: M. R. El-Aassar, Hala Fakhry, Samer El-Wazan, Yasser R Abdel-Fattah; *"Surface-Functionalization of novel poly (AN-co-ST/Py) copolymer electrospun nanofibers for using as high-performance carrier for laccase immobilization"*

77: L.Guachi; R.Guachi; F.Bini ; M.Bici; F.Marinozzi; F.Campana; *"Virtual Simulation System of Colorectal Tissues Using Finite Element Model for Analysing Surgical Scenarios"*

74: S.E.Falconer; R.A.Tomlinson; Z.A.Taylor; *"Developing a Soft Tissue surrogate for use in Photoelastic Testing"*

62: G. Marchiori, A. Parrilli, N. Sancisi, M. Berni, L. Luzi, R. Calzoni, M. Conconi, G. Cassiolas, S. Zaffagnini, N.F. Lopomo; *"Integration of micro-ct and uniaxial loading to analyse the evolution of 3d microstructure under increasing strain: application to the anterior cruciate ligament"*

38: Meysam Keshavarz; Bo Tan; Krishnan Venkatakrisnan; *"Quantum scale Silicon SERS bio-sensor for cell differentiation and diagnosis"*

Medical devices (BL.27.06)

Chairman:

84: R. Bertolini; S. Bruschi; A. Ghiotti; *"Enhancement of corrosion resistance to sterilization stages of a biomedical grade AISI 316L stainless steel by means of using of low-temperature coolants in machining"*

55: A.O. Kuznetcov, V. M. Musalimov; *"Developing of mobile system for lower limb monitoring"*

66: G.Marchiori; G.Cassiolas; M.Berni; N.F.Lopomo; G.Valente; C.Signorelli; M.Bontempi; S.Zaffagnini; *"Monitoring knee biomechanics in patients undergoing anterior cruciate ligament reconstruction: how joint loading affects cartilage quality"*

129: Benčina M., Junkar I., Kulkarni M., Lampe T., Kovač J., Lakota K., Sodin-Semrl S., Mozetič M., Valant M., Kralj-Iglič V. and Iglič A.; *"Nanostructuring of titanium for biomedical applications"*

11:00-11:20

COFFEE BREAK

11:20-13:00

Bio-inspired interfaces (BL.27.04)

Chairman:

68: S. Baik; D.W. Kim; J. Kim; C. Pang; *"Bioinspired wet/dry adhesion using meniscus-controllable 3-dimensional architectures"*

47: Rouzbeh Shahsavari; *"Biomimetic, Strong, Tough, and Self-Healing Composites Using Universal Sealant-Loaded, Porous Building Blocks"*

109: L. Zorzetto; D. Ruffoni; *"3D Printing of Bio-inspired Helical Composites with Enhanced Failure Resistance"*

130: J. Ubaid, M.F. Arifa, B.L. Wardle, S. Kumar; *"Compliance-Tailored of Multilayers via Multimaterial Jetting Additive Manufacturing"*

Mechanics of tissue and biomaterials 2 (BL.27.05)

Chairman:

93: P. Vena, D. Gastaldi, E. Cattarinuzzi, A. Alessandrino, G. Freddi; *"In-situ biaxial mechanical characterization of a bilayer silk fibroin vascular grafts"*

82: D. Pahr; M. Amini; A. Reisinger; *"Biomechanical measurement of the fracture risk of a human femur in multiple load directions based on DIC"*

101: D. Dapaah; A. Bahmani; J. Montesano; T. Willett; *"A continuum damage mechanics model of the microdamage process zone during cortical bone fracture"*

98: Benay Uzer, Sulayman Cicek, Ali Karaca; *"The Relationship of Surface Roughness and Wettability of Implants with Plastic Deformation Mechanisms"*

Multiscale characterization of bone and bones (BL.27.06)

Chairman:

134: L. Cristofolini; *"Multiscale investigation of the biomechanics of the natural, diseased and treated vertebrae and spine segments"*

94: P. De Falco; L. Xi; W. Wagermaier; R. Weinkamer; P. Fratzl; H. S. Gupta; *"Mechanical multi-scale modelling and structural characterization of bone"*

92: G. Ciobanu; M. Harja; G. Ciobanu; M. Harja; *"Hydroxyapatite coatings on titanium surface"*

65: M. Boi; G. Marchiori; M. Berni; M. Fini; A. Russo; M. Bianchi; *"Nano-mechanical investigation of engineered bone tissue and of the osteochondral interface"*

133: F. Cosmi, F. Saracchini; *"Bone structure evaluation: perspectives in oncology"*

13:00-14:20

LUNCH

14:20-15:10

PLENARY LECTURE: Prof. Thomas Webster

15:10-16:00

POSTER SECTION

Poster session

36: Abdalrahim Alahmad, J. Walter, T. Scheper; *"Green synthesis and characterization of Crystalline Silver Nanoparticles by using Hypericum perforatum L aqueous extract and Determination the organic"*

layer at the surface of these Nanoparticles"

- 61:** K. Nakade, K. Jindai, T. Sagawa, H. Kojima, T. Shimizu, S. Shingubara, T. Ito; *"Single cell / real-time imaging of bactericidal effect on the nano-structural surface"*
- 60:** K. Jindai, K. Nakade, T. Sagawa, H. Kojima, T. Shimizu, S. Shingubara, T. Ito; *"Investigation of nanostructure-based bactericidal effect derived from a cicada wing by using QCM-D"*
- 115:** Ho-Ryun Won, Jong-Eun Won, Chul-Ho Kim, Su A Park, Yoo Seob Shin; *"Osteo-Promoting 3D Scaffold Using an Engineered Peptide for Successful Bone Regeneration"*
- 138:** M. Molla, S. Bagherifard *"Influence of the surface state of pure iron samples on the corrosion rate in biological environment"*.
- 139:** S. Bagherifard, M. Jambor, D. Kajaneek, M. Guagliano *"Development of a new mechanical treatment able to cause hierarchical surface roughness in metals"*.
- 140:** S. Bagherifard, M. Guagliano *"Cold spray for functional bio-materials"*
- 141:** G. Grezzana, F. Libonati, A. Masic; *"Multimodal and multiscale modeling of bone microstructure"*
- 124:** A.E. Vellwock, L. Vergani, F. Libonati; *"Understanding the mechanical behavior of a bone-inspired composite material with an XFEM approach"*
- 142:** F. Gallina; F. Libonati; L. Vergani; M.J. Buehler; *"Probing the diatom structure for the design of bio-inspired materials"*
- 143:** A.E. Aguilar, P. Vena, L. Vergani, F. Libonati; *"XFEM modeling of additively-manufactured bioinspired composites"*
- 144:** F. Tamburrino, S. Graziosi, F. Ballo, F. Libonati; *"Chemistry-inspired architected materials"*
- 46:** T. Ito, H. Terasawa, N. Matsumoto, T. Shimizu, S. Shingubara; *"Dual Biosensor Coupling with Localized Surface Plasmon Resonance and QCM-D Using Nano-honeycomb Structure"*
- 104:** L. Sartore, N. Inverardi, S. Pandini, F. Bignotti, F. Chiellini; *PLA/PCL-Based Foams as Scaffolds for Tissue Engineering Applications.*

19:00-22.00

GALA DINNER

Friday, 29 th			
8:00-9:00	Registration		
9:00-9:40	PLENARY LECTURE (BL.27.04) : Prof. Nicola Pugno		
9:40-11:00	<p>AIAS 1 (BL.27.04) Chairman: 85: G. De Pasquale; <i>“Wearable sensing systems for biomechanical parameters monitoring”</i> 121: Cosmi F., Maximova N., Zennaro F.; <i>“A mesoscale assessment of bone structure abnormalities”</i> 89: D. D’Andrea; G. Epasto ; E. Guglielmino; G. Palomba; F. Traina; S. Di Bella; R. Mineo; <i>“Experimental investigation of rhombic dodecahedron micro-lattice structures manufactured by Electron Beam Melting”</i> 127: B. Leban, D.Fabbri, L.I.Lecca, M.Campagna, M.Pau; <i>“Characterization of pushing-pulling forces in hospital bed moving”</i></p>	<p>Mechanics of extreme materials (BL.27.05) Chairman: 43: Rahul Roy ; Ananda Mitra and Dr. Velchuri Sairam; <i>“Effect of Graphene Oxide in Cement composites incorporating Metakaolin and Silica Fume”</i> 39: H. V. Xu; X. T. Zheng; Y. L. Zhao; Y. N. Tan; <i>“Bioinspired Synthesis of Biomolecule-derived Fluorescent Nanodots from Natural Amino Acids with Enhanced Photostability, Biocompatibility and Cellular Uptake”</i> 37: Youngsoo Kim; Yongtae Kim; Tae-Ik Lee; Taek-Soo Kim; Seunghwa Ryu; <i>“An Extended Analytic Model for the Elastic Properties of Platelet-Staggered Composites and Its Application to 3D Printed Structures”</i> 123: A. H. Jabbari, M. Sedighi, M. Guagliano, S. Bagherifard, E. Ghazizadeh; <i>“Effect of Shot Peening Process on Residual Stress, Microhardness and Corrosion Behavior of Mg/HA Biocomposite”</i></p>	<p>Bio-inspired materials 2 (BL.27.06) Chairman 69: D. W. Kim, S. Baik, S. Jeong, H. J. Lee and C. Pang; <i>“Bioinspired, highly conformable, water-drainable adhesive patch inspired by tree-frog and octopi”</i> 41: Ran Tao, Marco Alfano, Gilles Lubineau; <i>“Evaluation of non-local bridging effect on the fracture toughness of composite joints with CFRP adherends”</i> 56: Kalyan Raidongia and Raj Kumar Gogoi; <i>“Strategic Shuffling of the Clay Layers to imbue them with Responsiveness”</i> 67: A. Šutka, M. Järvekülg, A. Šutka and K. A. Gross; <i>“Hydroxyl-functional nanoparticles as phase-modulating additives in electrospun polymer nanofibers”</i></p>
11:00-11:20	COFFEE BREAK		
11:20-13:00	<p>AIAS 2 (BL.27.04) Chairman: 105: G. La Rosa; <i>“Numerical simulation and experimental tests on a lumbar disk prosthesis”</i> 106: G. La Rosa, C. Clienti, D. Corallo; <i>“Design of a new intervertebral disc prosthesis”</i> 113: C. Pappalettere, F. De Cillis, Eng. C. Cianci, G. Siciliani, F. Cervinara; <i>“Set up of an experimental method to measure pressures between orthodontic aligner and tooth”</i> 126: M. Ciccì, G. Cervino, E. Guglielmino, G. Iannello, G. Risitano, D. Santonocito; <i>“Mechanical and Metallographic Evaluation of Two Common Brand Fixtures Dental Implants”</i></p>	<p>Smart sensors (BL.27.05) Chairman: 120:K.Mougin; H.Hoelscher; <i>“Surface color on demand: chameleon effect”</i> 114: R.Guarino; G.Greco; B.Mazzolai; N.M.Pugno; <i>“Fluid-structure interaction study of spider’s hairs sensing system”</i> 45: John Antalek, Peter Fasel, Abhi Patnaik; <i>“The Synergy of Conventional Ceramic Forming and Electronic Device Manufacturing Process to Develop Hermetic Braze-less Feedthroughs for Miniature and Low-profile Implantable Medical Devices”</i></p>	<p>Bio-inspired materials 3 (BL.27.06) Chairman 111:G. Perotto, C. Pignatelli, M. Nardini, R. Cancedda, M. Mastrogiacomo, A. Athanassiou; <i>“Silk nano materials for controlled drug release”</i> 53: R. Duarte; A. Ramos; F. Jordana; JM. Olive; A. Catapano-Montemurro and M. Mesnard; <i>“Towards a statistical characterization of the geometry of the bone tissues within a mandible ramus”</i> 35:Allison Goins, Vidhya Ramaswamy, Darcy Lichlyter, Antonio Webb, Josephine Allen; <i>“Engineering a Biomimetic Scaffold for Small Diameter Vessels”</i> 72:M. Järvekülg, P. Reemann, R. Liira V. Jaks, A. Šutka; <i>“Biomimetic 3D scaffolds and interactive cell substrates from gelatin”</i></p>
13:00-13:15	CLOSING CERIMONY		
13:15-14:30	LUNCH		

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