Sessions by Day

9th Forum on New Materials

Perugia, Italy • June 25-29, **2022**

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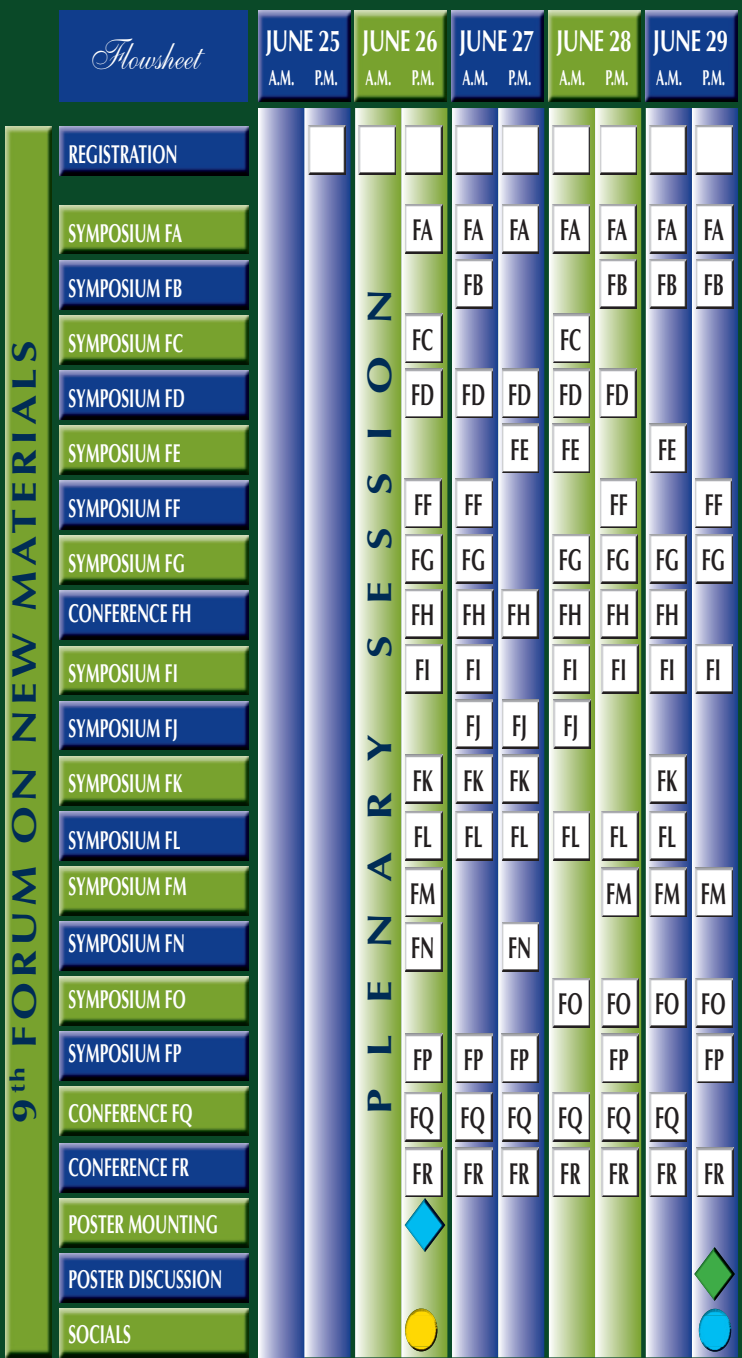
Flowsheet
JUNE 25 A.M. P.M.
JUNE 26 A.M. P.M.
JUNE 27 A.M. P.M.
JUNE 28 A.M. P.M.
JUNE 29 A.M. P.M.
9th FORUM ON NEW MATERIALS
PLENARY SESSION
REGISTRATION
SYMPOSIUM FA
SYMPOSIUM FB
SYMPOSIUM FC
SYMPOSIUM FD
SYMPOSIUM FE
SYMPOSIUM FF
SYMPOSIUM FG
CONFERENCE FH
SYMPOSIUM FI
SYMPOSIUM FJ
SYMPOSIUM FK
SYMPOSIUM FL
SYMPOSIUM FM
SYMPOSIUM FN
SYMPOSIUM FO
SYMPOSIUM FP
CONFERENCE FQ
CONFERENCE FR
POSTER MOUNTING
POSTER DISCUSSION
SOCIALS
WELCOME RECEPTION
CONFERENCE DINNER

Focused Session FA-5 / FQ-8

3D Bioprinting of Soft Tissues and Organs

(Focused Joint Session Symposium FA & Conference FQ)

Room: **ASSISI B**

Chair: Brian DERBY, UK

14.30 *FA-5/FQ-8:IL09* **Strategies for Bioprinting of Volumetric Tissue Constructs**
M. GELINSKY, Centre for Translational Bone, Joint and Soft Tissue Research, TU Dresden, Dresden, Germany

15.00 *FA-5/FQ-8:IL10* **Organ-on-chip Technology for the Study of Neuro-degenerative Disorders**
A. POLINI, CNR Nanotec, Lecce, Italy

15.30 *FA-5/FQ-8:L12* **A Biohybrid 3D-printed Tissue-sensor Platform for Continuous Monitoring of Cardiac Muscle Contractions**
UIJUNG YONG[1], D. KIM[1], H. KIM[2], D. G. HWANG[1], S. CHO[1], H. NAM[1], S. KIM[1], T. Y. KIM[1], U. JEONG[1], K. KIM[1], W. K. CHUNG[1], W.H. YEO[2], J. JANG[1], [1]POSTECH, Pohang, Gyeongsangbuk-do, South Korea; [2]Georgia Institute of Technology, Atlanta, GA, USA

15.50 *Break*

Chair: Jinah JANG, South Korea

16.20 *FA-5/FQ-8:L13* **3D Bioprinting of Human Islet-like Cellular Aggregates-Vascular Platform for Modeling Diabetes**
MYUNGJI KIM, S. CHO, D.G. HWANG, J. JANG, POSTECH, Pohang, Gyeongbuk, South Korea

16.40 *FA-5/FQ-8:IL15* **Implantable Bioprinted Devices for Vascularisation Studies**
B. DERBY, Department of Materials, University of Manchester, Manchester, UK

17.10 *FA-5/FQ-8:IL17* **Toward in vitro Tissue Modeling using Bioprinting Technology**
JINAH JANG, POSTECH, Pohang, Gyeongbuk, South Korea

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Presentation preference: Oral (O)

Abstract Title: A Biohybrid 3D-Printed Tissue-Sensor Platform for Continuous Monitoring of Cardiac Muscle Contractions

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Abstract (Maximum 1300 characters):

Engineered heart tissue (EHT), made up of cardiac cells and a hydrogel, has long been thought to be a viable *in vitro* cardiac model since it can mimic the physiological contractions of an animal heart. The contractile force of EHT, in particular, is one of the typical criteria for evaluating drug-induced cardiotoxicity, which is a key reason of drug development withdrawal. Although there have been numerous methods for monitoring the EHT's contractile force, the majority of them rely on optical readout systems that must handle a large amount of image data. In recent years, a strain gauge-based microphysiological device for monitoring the contractile force of laminar heart tissue was created, and it can capture real-time data with a tiny amount of data. However, the device can only monitor few layers of cardiomyocytes, which is a physiologically less relevant compared to EHT. In this study, we created a biohybrid 3D printed tissue-sensor platform with six bi-pillar-grafted strain gauges (BPSGs) and one wireless device that allows for real-time online monitoring of contractile forces from six separate EHTs during culturing. We also confirmed that our approach is capable of detecting the impact of commercially available medications on EHTs.