

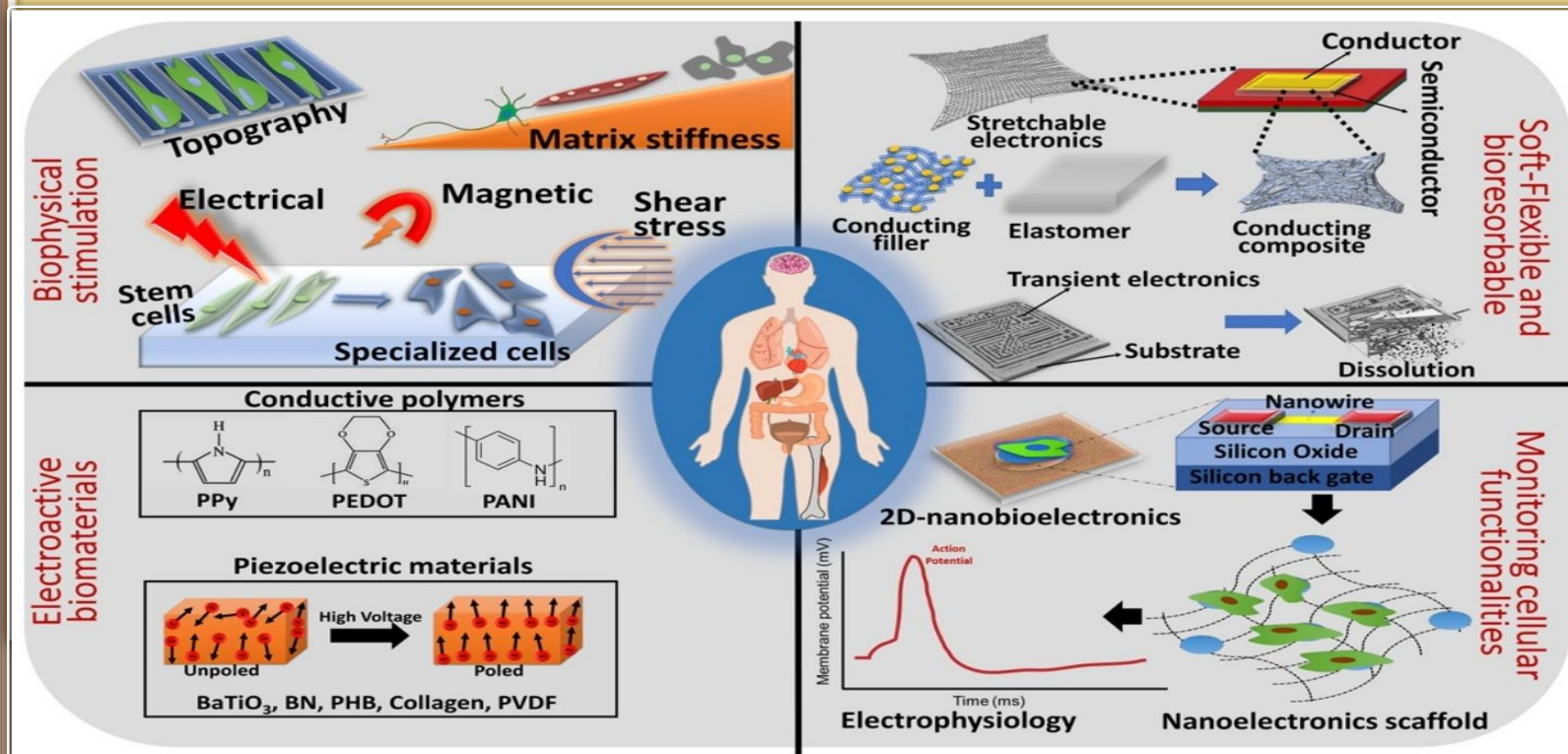
INTERNATIONAL WORKSHOP BIOELECTRONIC MEDICINE

Theme and Relevance

The field of bioelectronic medicine represents the convergence of concepts from multiple disciplines, including Biomaterials Science, Biomedical Engineering, Neuroscience and Medicine, in a fast-developing way to treat chronic diseases. The significant progress in the field of bioelectronic medicine has resulted in the development of implantable devices, e.g., neuromodulation devices for chronic pain management.

Our ability to precisely control the cell functionalities has been identified as the key underpinning factors in such impressive development. However, many research outcomes from academia have still not been translated to bioelectronic devices. In particular, the intermittent delivery of properly tuned pulsed dynamic electrical stimulation demonstrated the potentiality in modulating neurogenic/ osteogenic/ myogenic/ chondrogenic differentiation of stem cells. However, many such research outcomes are still not translated to clinical studies.

In this perspective, the bioengineering approach of integrating electronic systems with biomaterial-based scaffolds will be discussed in this workshop, by the global experts as well as young researchers. The present status of understanding the applications of electroactive biomaterials to deliver bioelectrical cues for regulating cell fate processes will be reviewed. Along with the fundamental physical phenomenon at the tissue-electrode interface, advancements in nanoelectronic devices will be presented in some of the lectures, together with the emergence of the soft and flexible electronics as next-generation bioelectronic devices with a more stable and compatible biointerface. Clinically-led bioelectronics medicine to regulate the electrical signaling at the neural interface will be highlighted. It is hoped that the discussion in this workshop will accelerate innovation to translate biomaterials-based biophysical stimulation towards the development of bioartificial organs.



Panda and Basu; Mat. Sci. and Engg.: R 146 (2021) 100630

Workshop schedule:

December 16, 2021 (Thu): 9 am – 8 pm IST

Registration deadline: December 10, 2021

Who should attend?

Graduate/Masters Students, Scientists and faculty members, working in the field of Bioelectronic Medicine.

Registration link: <https://forms.gle/oNedCSB3KrfXXzUJ6>

OUR SPEAKERS

	Prof. John A. Rogers Northwestern University, USA	
	Prof. K. Yamashita Tokyo Medical and Dental University, Japan	
	Prof. Miho Nakamura University of Turku, Finland	
	Dr. Manus Biggs National University of Ireland	
	Dr. Roberto Portillo Lara Imperial College London, UK	
	Dr. Sunil Kumar Boda University of Minnesota, USA	
	Asish K. Panda IISc Bangalore, India	

Conveners



Dr. Ashutosh Kumar Dubey
IIT (BHU), Varanasi




Prof. Bikramjit Basu
IISc, Bangalore

Co-host

Dr. Jonny Blaker
Research Area Lead Biomedical Materials,
Henry Royce Institute, The University of Manchester



SPARC-sponsored International Workshop on
"Bioelectronic Medicine"
Schedule

S.N.	Speaker	Institute/University	 (Indian Standard Time)
	Dr. Ashutosh Kumar Dubey	IIT BHU, India	9:00 am – 9:05 am (Overview of workshop)
Session-1, Chair: Dr. C.V. Muralidharan & Dr. Bikramjit Basu			
1.	Prof. Bikramjit Basu	IISc Bangalore, India	9:05 am – 9:15 am Bioelectronic medicine: Indian Landscape
2.	Prof. John A. Rogers	Northwestern University, Evanston, Illinois, United States	9:15 am – 10 am (45 min)
3.	Prof. Surya K. Mallapragada	Iowa State University, Iowa, USA	10:00 am – 10:30 am
4.	Dr. C. V. Muraleedharan	Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, India	10:30 am – 11:00 am
Tea break (11:00 am – 11:15 am)			
Session-2, Chair: Dr. Ashutosh Dubey			
5.	Dr. Greeshma Thrivikraman	Indian Institute of Technology Madras Chennai, India	11:15 am – 11:45 am
6.	Prof. Kimihiro Yamashita	Tokyo Medical and Dental University, Tokyo, Japan	11:45 am – 12:15 noon
7.	Prof. Miho Nakamura	University of Turku, Turku, Finland	12:15 pm – 12:45 pm
8.	Dr. Jonny Blaker	University of Manchester, Manchester, UK	12:45 pm – 1:00 pm
Lunch break (1:00 pm – 2:30 pm)			
Session-3, Chair: Dr. Bikramjit Basu			
9.	Prof. Sarah Cartmell	University of Manchester Manchester, UK	2:30 pm – 3:00 pm
10.	Prof. George Malliaras	University of Cambridge, England, UK	3:00 pm – 3:45 pm
11.	Prof. Senentxu Lanceros-Mendez	University of Minho, Braga, Portugal	3:45 – 4:15 pm
12.	Dr. Manus Biggs	National University of Ireland, Galway, Ireland	4:15 pm – 4:45 pm
13.	Dr. Asish Kumar Panda	IISc Bangalore, India	4:45 pm – 5:15 pm
14.	Talk by Defence Bio-Engineering & Electro Medical Laboratory (DEBEL), Bangalore, India		5:15 pm – 5:45 pm
Tea break (5:45 pm – 6:00 pm)			
Session-4, Chair: Dr. Greeshma Trivikramanan			
14.	Dr. Alok Kumar	Harvard Medical School, Boston, USA	6:00 pm – 6:30 pm
15.	Dr. Ravi Kumar .K	University of Pittsburgh, Pittsburgh, Pennsylvania, USA	6:30 pm – 7:00 pm
16.	Dr. Sunil Kumar Boda	University of Minnesota, Minnesota, USA	7:00 pm – 7:30 pm