



Webinar on "SCIENCE AND ENGINEERING: DRIVE FOR INNOVATION"

Organized By

M.S. Swaminathan School of Agriculture, Centurion University of Technology and Management

Date: 20-08-2020 to 20-08-2020

No. of Participants: 187

Resource Person

Dr Tapan Kumar Rout

Principal Scientist and Project Leader at Tata Steel Europe

About session:

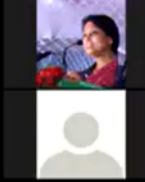
Conducting polymers (CPs) have drawn considerable attention because of their economical importance, good environmental stability and electrical conductivity as well as due to their useful mechanical, optical and electronic properties. Some of the widest applications of conducting polymers include: they are used in electrostatic materials, conducting adhesives, electromagnetic shielding against electromagnetic interference (EMI), artificial nerves, aircraft structures, diodes, and transistors.

The important properties of various CPs and their potential applications are discussed in the webinar. The origin of electrical conduction in CPs has been ascribed to the formation of nonlinear defects such as solitons, polarons or bipolarons formed during either doping or polymerization of a monomer. Conductivity in CPs arises from the presence of conjugated double bonds along the backbone of an otherwise insulated structure. In conjugation, the bonds between the carbon atoms are alternatively single and double. Every bond in the backbone contains a localized 'sigma' (σ) bond, which forms a strong chemical bond and every double bond also contains a less strongly localized 'pi' (π) bond. Conductivity is imparted to these polymers through the use of a dopant ion, which must be introduced to the structure to carry charge in the form of extra electrons. The dopant neutralizes the unstable backbone when the polymer is in the oxidized form. On application of a potential across the film, a flux of ions either in or out of the film, dependent on dopant charge and motility, disrupts the stable backbone, resulting in the passage of charge through the polymer film. Conducting oligomers of pyrrole and thiophene connected by ester linkages have been considered for the creation of temporary scaffolds for cell attachment and proliferation for tissue engineering applications. In addition, these scaffolds are biodegradable. The possibility of growing cells on CPs has proven the biocompatibility of these polymers. Further, recently the biocompatibility of PPy and PEDOT films and PPy and PEDOT nanotubes was evaluated using a dorsal root ganglion model. The implantation of CPs *in vivo* for



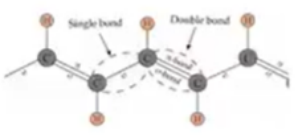

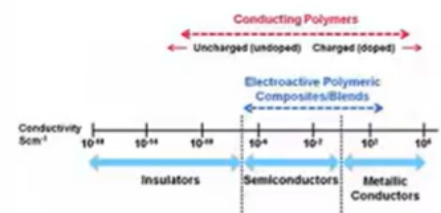
several weeks has led to only minimal inflammation, again pointing to low toxicities and good tissue compatibility. Moreover, successfully demonstrated that PEDOT nanotubes could record neuronal spikes about 30 per cent more than control sites with a high signal-to-noise ratio (SNR) for seven weeks post-implantation *in vivo*. Although there have been a number of reviews on CPs with regard to biomedical applications, this review focuses solely on the various tissue engineering and drug-delivery applications. Moreover, this review accentuates the various surface functionalization techniques that can be used in order to modify the physico-chemical, electrical and mechanical properties of the CPs so as to improve their potential biomedical applications.

Content

- Examples of innovation
- Few works at my Lab
- Open discussion on Innovation



Conducting polymer



Screenshots of the event



WEBINAR ON

SCIENCE AND ENGINEERING: DRIVE FOR INNOVATION

Date: 20-08-2020

**Organized by:
School of Engineering & Technology**



Dr Tapan Kumar Rout

Principal Scientist and Project Leader
at Tata Steel Europe

Centurion University of Technology and Management

centurion university of technology and management
Shaping Lives... Empowering Communities...

Brochure of the Event

List of Participants:

1	Nanda Kishore Ray	Assistant Professor
2	Mr. Satyanarayan Padhy	Assistant Professor
3	Mr. Rajesh Kumar Misra	Assistant Professor
4	Ms. N. Jeevaratnam	Assistant Professor
5	Mr. Vignesh M.	Assistant Professor
6	Dr. Rajib Kumar Majhi	Assistant Professor
7	Dr. P. Srinivasa Rao	Professor

8	Mr. Mir Sadat Ali	Associate Professor
9	Dr. Sujit Mishra	Assistant Professor
10	Dr. Santosh Patro	Assistant Professor
11	Dr. Nagesh Kolagani	Professor
12	Dr. Dhawaleswar Rao CH	Associate Professor
13	Mr. Abinas Panda	Assistant Professor
14	Dr. Dillip Rout	Assistant Professor
15	Mr. Anshuman Pattanaik	Assistant Professor
16	Mr. Kirtidev Mohapatra	Asst. Professor
17	Jagannath Padhy	Assistant Professor
18	Tofan Kumar Nahak	Assistant Professor
19	N. Dibakar Choudhury	Assistant Professor

20	Abinash Barik	170301151025	School of Engineering and Technology
21	Abinash Behera	181207160003	School of Vocational Education And Training
22	Akash Kumar Singh	180301160030	School of Engineering and Technology
23	Amiya Thakur	170301150009	School of Engineering and Technology
24	Anand kumar Tiwari	180301130003	School of Engineering and Technology
25	Ananta Prasad Sethi	181207160011	School of Vocational Education And Training
26	Anshuman panda	180301160025	School of Engineering and Technology
27	Ansuman sadangi	180301160029	School of Engineering and

			Technology
28	Arka Dasgupta	191207150012	School of Vocational Education And Training
29	Arrkaditya Nayak	190301160018	School of Engineering and Technology
30	Ashis kumar samal	180301160008	School of Engineering and Technology
31	Ashish Sen	191207150008	School of Vocational Education And Training
32	Ayush kumar	170301150022	School of Engineering and Technology
33	Binamra Bikash Swain	170301140013	School of Engineering and Technology
34	Bishwajit rout	180301160022	School of Engineering and Technology
35	Biswajit mandal	171207151074	School of Vocational Education And Training
36	Chinmaya Sahu	180301160017	School of Engineering and Technology
37	D. Nabin Kumar	181207160002	School of Vocational Education And Training
38	Debabrata singh	171516100037	School of Pharmacy and Life Sciences
39	Deepak sahuo	180301160042	School of Engineering and Technology
40	DEVULAPALLI SHIRDI SAGAR	180301160015	School of Engineering and Technology
41	Dinesh mukhi	181207110012	School of Vocational Education And Training
42	Laxmi Narayan Das	180301160001	School of Engineering and Technology

43	Md jafar hossain	181207120005	School of Vocational Education And Training
44	Md jawed Akhter	180301160037	School of Engineering and Technology
45	Md Olid iliyas	180301160010	School of Engineering and Technology
46	Milan Prusty	170301150012	School of Engineering and Technology
47	Om Tanmay Parija	181207160005	School of Vocational Education And Training
48	Prabhu Prasad Das	180301160007	School of Engineering and Technology
49	Prajna. Paramita aparajeeta	190402100011	School of Management
50	Pralaya Swain	181207120019	School of Vocational Education And Training
51	Pritam Kumar Tripathy	170301150014	School of Engineering and Technology
52	Pritiranjana pattanaik	180301160009	School of Engineering and Technology
53	Pujarani das	190402120006	School of Management
54	Rakesh swain	180301160014	School of Engineering and Technology
55	Rashmiranjan Rout	180301160033	School of Engineering and Technology
56	Rati Ranjan Sabat	181207160007	School of Vocational Education And Training
57	Rohit Kumar	180301120013	School of Engineering and Technology
58	Rudra Pratap Padhi	170301140014	School of Engineering and Technology

59	Sabyasachi Dalabehera	170301140013	School of Engineering and Technology
60	Sagar kumar majhi	170301150007	School of Engineering and Technology
61	Sambit biswal	181207111036	School of Vocational Education And Training
62	Sanaj kumar sahh	171516100041	School of Pharmacy and Life Sciences
63	Sandeep Dehury	170301140004	School of Engineering and Technology
64	Sandeep Kumar das	171207120010	School of Vocational Education And Training
65	Santanu Ghosh	171207151078	School of Vocational Education And Training
66	sanyash chandra bhagat	180301160004	School of Engineering and Technology
67	Saras ram dash	190301160007	School of Engineering and Technology
68	Sasanka sekhar acharya	181207111037	School of Vocational Education And Training
69	Saugat Kumar Shaw	180301160020	School of Engineering and Technology
70	Shailesh Hessa	180301160035	School of Engineering and Technology
71	Sibasundar Mirda	180301160005	School of Engineering and Technology
72	Sitaram Behera	170301150020	School of Engineering and Technology
73	Soumya Ranjan Das	180301160013	School of Engineering and Technology
74	Soumya Ranjan Ojha	170301150021	School of Engineering and Technology

75	Soumyaranjan pradhan	180301160023	School of Engineering and Technology
76	Soung Sampurna Swain	180301160027	School of Engineering and Technology
77	Subhrajeet nayak	170301140007	School of Engineering and Technology
78	Sukhetra Ranjan Sahu	170301140001	School of Engineering and Technology
79	Suryakanta Rout	180301160016	School of Engineering and Technology
80	Tukuli Jena	181207120015	School of Vocational Education And Training
81	Uddesh Kumar Pati	170301150008	School of Engineering and Technology
82	UTTAM KUMAR MAHATO	180301120085	School of Engineering and Technology
83	Vijay kumar mahto	180301130002	School of Engineering and Technology
84	Aayush labh	191207120039	School of Vocational Education And Training
85	Abhijit Sahoo	171207120072	School of Vocational Education And Training
86	Abhishek Prasad	170301161073	School of Engineering and Technology
87	Aditya kar	170301160040	School of Engineering and Technology
88	Akash Kumar	180301190003	School of Engineering and Technology
89	Arun Alok Mahakud	170301161065	School of Engineering and Technology
90	Arun kumar murmu	171207120061	School of Vocational Education And Training

91	Aryaman Nayak	170301120052	School of Engineering and Technology
92	Asit kumar Sahoo	170301160030	School of Engineering and Technology
93	Aswini Kumar Biswal	171207120052	School of Vocational Education And Training
94	Barnali Rout	181704150003	School of Paramedics And Allied Health Sciences
95	Basudev Nayak Acharya	171207121074	School of Vocational Education And Training
96	Bhabani sankar behera	170301161072	School of Engineering and Technology
97	Bishnu bibhab dash	170704100011	School of Applied Sciences
98	Bishwa ranjana parida	171207120051	School of Vocational Education And Training
99	Biswadeb Guin	170301160052	School of Engineering and Technology
100	BISWAJEET DAS	170301160056	School of Engineering and Technology
101	Ch.mohan kumar	171207120045	School of Vocational Education And Training
102	Chandrahas pradhan	171207121086	School of Vocational Education And Training
103	Chinmaya kumar palei	171207120023	School of Vocational Education And Training
104	Chinmayeemoti Sahoo	170301200023	School of Engineering and Technology
105	D.vikask kumar	171207120044	School of Vocational Education And Training
106	Debashrita Nath	19170422002	School of Paramedics And Allied Health Sciences

107	Debasis Rout	191207120013	School of Vocational Education And Training
108	Debasish Pradhan	171207121073	School of Vocational Education And Training
109	Deepak dubey	190705120035	School of Applied Sciences
110	Dibyajyoti Das	171207121088	School of Vocational Education And Training
111	Gobardhan malik	170301160041	School of Engineering and Technology
112	Jeeban Chand Nayak	170301120111	School of Engineering and Technology
113	M.Varun	171207120009	School of Vocational Education And Training
114	Mandeep Bose	170301161064	School of Engineering and Technology
115	Md Abbas	171207120059	School of Vocational Education And Training
116	Md Abuhorera	171207120060	School of Vocational Education And Training
117	Md Mujjammil Ansari	171207120062	School of Vocational Education And Training
118	Md Naquibus Swalihin	171207120014	School of Vocational Education And Training
119	Mohammad Asif Ibrahim	170301160044	School of Engineering and Technology
120	Nishant sharma	190301190013	School of Engineering and Technology
121	PRABHU KUMAR MEHTA	171207130014	School of Vocational Education And Training
122	Pravat Kumar Behera	171207121077	School of Vocational Education And Training

123	Preeti Pal	170704150025	School of Paramedics And Allied Health Sciences
124	Priyanka priyadarsini Bal	181704150028	School of Paramedics And Allied Health Sciences
125	RAJESH SETHI	190402120004	School of Management
126	Rakesh Malik	171207121083	School of Vocational Education And Training
127	Rakesh mohanty	170301160042	School of Engineering and Technology
128	Rockey jena	170301161059	School of Engineering and Technology
129	Rohan kumbhar	170301161069	School of Engineering and Technology
130	S GYANESH PATRO	170301160035	School of Engineering and Technology
131	Sahil Kumar Pandey	170301160017	School of Engineering and Technology
132	Samprash Kumar Jena	191207130002	School of Vocational Education And Training
133	Santosh Sahu	170301160037	School of Engineering and Technology
134	Satyabrata Samal	190301110024	School of Engineering and Technology
135	Sawan kumar biswal	170301160050	School of Engineering and Technology
136	Smruti ranjan sahu	191704220003	School of Paramedics And Allied Health Sciences
137	Somabrata sahu	170301160029	School of Engineering and Technology
138	Sonu Bishayee	191207120010	School of Vocational Education And Training

139	Soumya ranjan mishra	170301160034	School of Engineering and Technology
140	Soumya Ranjan Parida	191207120023	School of Vocational Education And Training
141	Srinibas biswal	171207120031	School of Vocational Education And Training
142	Subham jyoti ray	19030110016	School of Engineering and Technology
143	Subham patra	170301160032	School of Engineering and Technology
144	Subhangam Choudhury	190301110018	School of Engineering and Technology
145	Sudipta Sundar Roy	170301160016	School of Engineering and Technology
146	Sukanya Mohanty	170301200030	School of Engineering and Technology
147	Suraj Kumar Singh	191207120020	School of Vocational Education And Training
148	Suraj sarejendu pal	170301161071	School of Engineering and Technology
149	Swayam subhajeet	190301160014	School of Engineering and Technology
150	U. rakesh	171207120025	School of Vocational Education And Training
151	Uma Shankar Raj	190301110025	School of Engineering and Technology
152	Yogeshwar Dash	191207120009	School of Vocational Education And Training
153	Abhishek Biswal	170301120173	School of Engineering and Technology
154	Amit kumar pradhan	170301160058	School of Engineering and Technology
155	Aniket Senapati	170301120105	School of Engineering and Technology
156	Ankita Mahato	171516100074	School of Engineering and

			Technology
157	Ashirbad Sahoo	181516101063	School of Engineering and Technology
158	Ashutosh Mohapatra	190301120013	School of Engineering and Technology
159	Ashutosh Tripathy	170301120050	School of Engineering and Technology
160	Debasish sundaray	170301120019	School of Engineering and Technology
161	E Bhargav	170301120130	School of Engineering and Technology
162	Harikishan Das	180705100003	School of Applied Sciences
163	K bal Gopal	170301120129	School of Engineering and Technology
164	Kargil Biplab Dhal	171516100042	School of Engineering and Technology
165	Kiran Kumar jayasingh	171516100051	School of Engineering and Technology
166	Kunal Panigrahi	170301120127	School of Engineering and Technology
167	N Dibesh Choudhury	170301120169	School of Engineering and Technology
168	Rahul Samantaray	181516100061	School of Engineering and Technology
169	Rajveer Chhotray	170301160053	School of Engineering and Technology
170	Rakesh Kumar Das	190301120046	School of Engineering and Technology
171	RANJIT SINGH	190301120051	School of Engineering and Technology
172	Reeteswar Pradhan	180301120053	School of Engineering and Technology
173	Rhythm Paul	170301120161	School of Engineering and Technology

174	Rinki Gauda	171516100003	School of Engineering and Technology
175	Rohan pravas	170301120156	School of Engineering and Technology
176	Sagnik Katari	171516100060	School of Engineering and Technology
177	Sambit Behera	190705170071	School of Applied Science
178	Satya ranjan baral	170301200016	School of Engineering and Technology
179	Shireen	190301230010	School of Engineering and Technology
180	Soumya Sourav Barik	190301160010	School of Engineering and Technology
181	Sourav sambit	171516100070	School of Engineering and Technology
182	Subasish Tripathy	171516101079	School of Engineering and Technology
183	Subham panigrahi	171516101075	School of Engineering and Technology
184	Sunita Rani Panda	171516100050	School of Engineering and Technology
185	Suvam Mishra	170301120064	School of Engineering and Technology
186	Swahil Suvam	180301120060	School of Engineering and Technology
187	Purbi Panigrahi	180101131010	SoET



Prabhat K. Pattnaik
FDP Coordinator



Dr. Prasanta Ku. Mohanty
Dean Academic