

Indo-US Joint Meeting
University at Buffalo (UB), USA | Indian Institute of Technology (IIT Delhi, Bombay, Kanpur, Jodhpur, BHU), India | Ashoka University, India | US Department of Defense Research, USA
November 28-30, 2022
Venue- IIT Delhi, India

Monday, November 28, 2022

Inaugural Session	Seminar Hall (Main Building, Ground floor)	
	<p>9.00 AM</p> <p>Welcome:</p> <p>Ashok Ganguli (IIT Delhi, Convenor) 9.00 -9.05 AM</p> <p>Prof. Naveen Garg (Dean, International Programmes, IIT Delhi) 9:05 – 9:10 AM</p>	
Ashok Ganguli & Venu Govindaraju		

Chairs:

Time	Speaker	Title	Duration
09:10	A. K. Sood	Scientific Advisor to the Govt. of India, New Delhi	0:15
09:25	Samir V Kamat	Chairman DRDO, New Delhi	0:15
09:40	S. Chandrasekhar	Secretary, Department of Science and Technology (DST), India	0:15
09:55	Sethuraman Panchanathan	Director, U.S. National Science Foundation (online)	0:15
10:10	Satish Tripathi	President UB, USA	0:15
10:25	Randeep Guleria	Fmr Director, AIIMS, New Delhi	0:15
10:40	Anurag Agrawal	Fmr Director CSIR-IGIB (Dean, Ashoka University)	0:15
10:55	Paras Prasad	Executive Director, Institute for Lasers, Photonics and Biophotonics, UB, USA (Convenor)	0:15
11:10	<i>High Tea (30 min)</i>	<i>Central Square, IIT Delhi campus</i>	0:30
11:40	Rangan Banerjee	Director, IIT Delhi	0:15
11:55	Subhasish Chaudhuri	Director, IIT Bombay	0:15
12:10	Abhay Karandikar	Director, IIT Kanpur	0:15
12:25	Santanu Chaudhury	Director, IIT, Jodhpur	0:15
12:40	Pramod Kumar Jain	Director, IIT, BHU	0:15

12:55	Lunch	Central Square, IIT Delhi campus	1:35
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Session II: Insights into challenges and benefits of multi-party, multi-national, and multi-disciplinary collaboration

Chairs:
Dhirendra Katti, IIT Kanpur
Mark Swihart, UB

14:30	Anita Mahadevan-Jansen	President, SPIE	0:15
14:45	Ashutosh Sharma	President-Elect INSA (Fmr Secy, DST Gol, New Delhi)	0:15
15:00	Venu Govindaraju	Vice President for Research and Economic Development, UB	0:15
15:15	Gautam Menon	Dean (Research), Ashoka University	0:15
15:30	Tea	Central Square, IIT Delhi campus	0:30

Session III: Strategic Vision with Government-Academia-Industry Partnership and Entrepreneurship

Chair:
Paras Prasad, UB
Sunil K. Khare, IIT Delhi

	This session will focus on 1) overall vision for sustainable, multi-institution collaboration, 2) enhancing collaboration with industries, encouraging entrepreneurship, and 3) engaging in international networking		
16:15	Ravi Bansal, Co-Founder, AirSep		0:15
16:30	R. R. Sonde, IIT Delhi (Fmr Executive Vice-President of Research, Technology and Innovation, Thermax, Pune, Maharashtra, India)		0:15
16:45	Krishna Pal Singh, Chair, President, and CEO, Holtec International (online)		0:20
17:05	Conclude		
18:30	Dinner		

Tuesday, November 29, 2022

Session III - continued: Introduction to U.S. DoD Interests and Opportunities

Chair: Paras Prasad, UB
Sunil K. Khare, IIT Delhi

9:00	Katherine Mangum, Harish Potukuchi, Derrick Marcus TePaske, US Department of Defense Research	0:30
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Sessions IV to VII are technical sessions: Each technical session will include presentations of the relevant identified collaborative projects, finalization of multi-institutional teams for each project, discussions of project launch strategy, project coordination strategy, seed funding, and challenges to overcome. Each session will end with final project road maps and associated tentative resource commitments/allocations. Selected presentations on future projects are discussed after the coffee break in each session.

**Session IV: Artificial Intelligence, Machine Learning and Multiscale Modeling
Topic: Thematic Discussions on Potential Projects**

Chairs: Sukumar Mishra, IIT Delhi
David Doermann, UB

	Theme	Speakers	Affiliation	Other participants	
9:30	Yardi School of AI at IIT Delhi	Srikanta Bedathur	IIT Delhi		0:10
9:40	Joint Visual-Language Grounding for Robot Manipulation.	Karthik Dantu Rohan Paul	UB IIT Delhi		0:20
10:00	AI-Enabled Discovery and Design of Carbon Capture Materials	Johannes Hachmann M. Ali Haider Jayant Kumar Singh	UB IIT Delhi IIT Kanpur		0:20
10:20	Voice Biomarkers for Public Health	Wenyao Xu Vipul Arora	UB IIT Kanpur		0:20
10:40	Intelligent Assessment of cybersecurity risks and compliance for current and future power grids	Jinjun Xiong Siddhartha Gupta	UB IIT Delhi		0:20
11:00	Concluding Discussions and Team Forming				0:20
11:20	<i>Tea (Central Square, IIT Delhi campus)</i>				0:20

Topic: Discussion on future projects on Artificial Intelligence, Machine Learning and Multiscale Modeling

Chairs: Manoj Choudhary, IIT Jodhpur
Jijun Xiong, UB

	Speaker	Affiliation	Title	
11:40	Chunming Qiao, UB Swades De, IIT-Delhi	UB IIT Delhi	Connected and Autonomous Vehicle Applications	0:20
12:00	David Doermann	UB	Federated Learning for Privacy Preseerving Medical Applications	0:20
12:20	Hari Prabhat Gupta	IIT BHU	Computer networks and IoT	0:20

12:40	Mayank Vatsa	IIT Jodhpur	TBD	0:20
13:00	Sandeep Kumar	IIT Delhi	Contextual Graph Summarization and Privacy Preserving Graph Federated Learning	0:20
13:20	<i>Lunch at Central Square, IIT Delhi Campus</i>			1:10

Session V: Photonics
Topic: Thematic Discussions

Chairs Joby Joseph, IIT Delhi
: Sambandamurthy Ganapathy, UB

	Theme	Speaker/s	Affiliation	Other participants	
14:30	Quantum photonics for quantum sensing and imaging	Joyee Ghosh V. Narayanan Anand Jha	IIT Delhi IIT Jodhpur IIT Kanpur	Jasleen Lugani [IIT Delhi], Nitin Mohan [IIT Kanpur]	0:20
14:50	Multiscale physics guided design criteria and development of new generation chiral magneto-optic media	Johannes Hachmann Susmita Saha Durgamadhhab Mishra	UB Ashoka University IIT Jodhpur	Bhaskar Kanseri, [IIT Delhi], Somnath Ghosh, Rahesh Kumar Singh [IIT Jodhpur]	0:20
15:10	Photon conversion science and technology, using both organic and inorganic nanostructures	Deepak Asthana Paras Prasad Mohit Tyagi	Ashoka University UB BARC	Ashok Ganguli, G. V. Prakash [IIT Delhi]	0:20
15:30	Photonics for clean energy and sustainability (photovoltaics, electrochromics, solid-state lighting, etc.)	Krishna Rajan Ashok Ganguli	UB IIT Delhi	Sudip Pattanayek [IIT Delhi], K. V. Ramanujachary [Rowan University]	0:20
15:50	Two-photon Lithography for Microneedle Patches to Real-time Monitor Substance Abuse & On-demand Drug Delivery	Shobha Shukla Ashutosh Sharma	IIT Bombay IIT Kanpur		0:20
16:10	<i>Tea (Central Square, IIT Delhi campus)</i>				0:30

Topic: Discussion on future projects on Photonics

Chairs: Shobha Shukla, IIT Bombay
Jonathan Bird UB

	Speaker	Affiliation	Title	
16:40	Sambandamurthy Ganapathy	Physics, UB	Quantum Sciences @ UB Physics	0:20
17:00	Kedar Khare	IIT Delhi	Computational Imaging with noisy and incomplete data	0:20
17:20	Dheeraj Pratap	IIT Delhi	Thermoplasmonics of metal nanoparticles for biomedical applications	0:20
17:40	Parvendra Kumar	IIT Delhi	Nonclassical Light from Quantum Dots	0:20
18:00	Concluding Discussions and Team Forming			0:20
19:00	<i>Dinner</i>			

Wednesday, November 30, 2022

**Session VI: Nanoscale, Nanostructured, and Hybrid Materials
Topic: Thematic discussions on Potential Projects**

Chairs: Yogesh Joshi, IIT Kanpur
Mark Swihart, UB

	Theme	Speaker/s	Affiliation	Other participants	
9:00	Novel 2-D nanostructures involving borophene and clay, their organic:inorganic hybrids, and heterostructures for optoelectronics, and photo/electrocatalysis, and water purification	Leena Nebhani, Amitava Banerjee Pranay Ranjan Jayant Singh	IIT Delhi IIT Jodhpur IIT Jodhpur IIT Kanpur	Mahesh Kumar, Devendra Negi, Angan Sengupta, Ritu Gupta, Satyajit Sahu, [IIT Jodhpur], Ashok Ganguli, Bhaskar Mitra, [IIT Delhi], Raju Gupta, Santosh Kumar Misra [IIT Kanpur]	0:20
9:20	Novel materials for hydrogen generation and carbon capture, leveraging novel synthesis routes and AI-enabled design of materials	Shenqiang Ren, Rakesh Sharma	UB IIT Jodhpur	Prashant Kumar Gupta, [IIT Jodhpur], Pravin P. Ingole [IIT Delhi], Sri Sivakumar, Nishit Verma [IIT Kanpur]	0:20
9:40	Biosynthesis and bioprocessing of nanomaterials, including materials for extreme environments produced at mild conditions and remediation to remove toxic heavy elements	Indranil Banerjee Sunil K. Khare	IIT Jodhpur IIT Delhi	Samanwita Pal, Trishikhi Raychoudhury, Vikky Anand, Meenu Chabra [IIT Jodhpur], Bijay Tripathhi, Ali Haider, IIT Delhi	0:20
10:00	Nanomaterials for agricultural applications	Prashant Mishra Sunil K. Khare Ashok K. Ganguli	IIT Delhi IIT Delhi IIT Delhi		0:20
10:20	Concluding Discussions				0:20
10:40	Team forming				0:20
11:00	<i>Tea (Central Square, IIT Delhi campus)</i>				0:20

Topic: Discussion on future projects on Nanoscale, Nanostructured, and Hybrid Materials

Chairs: Jayant Singh, IIT Kanpur
Johannes Hachmann, UB

	Speaker	Affiliation	Title	
11:20	Mark Swihart	Chemical and Biological Engineering, UB	Nanomaterials and Technology for Sustainable Energy and Decarbonization	0:20
11:40	Krishna Rajan	Materials Design & Innovation, UB	Materials Informatics for Nanoscience	0:20
12:00	Javid Rzayev	Chemistry, UB	TBA	0:20
12:20	Sanjay Singh	IIT BHU	TBA	0:20
12:40	Manoj Choudhary	IIT Jodhpur	Next generation semiconducting media	0:20
13:00	Yogesh Joshi	IIT Kanpur	TBA	0:20
13:20	<i>Lunch (Central Square, IIT Delhi campus)</i>			1:00

Session VII: Biotechnology and Nanomedicine
Topic: Thematic Discussions on Potential Projects

Chairs: L. Shashidara, Ashoka U
Stanley Schwartz, UB

	Theme	Speaker/s	Affiliation	Other participants	
14:20	Nanotheranostics for brain diseases and dysfunction	S. Ganesh, Supriya Mahajan Ruchi Chawla	IIT Kanpur UB IIT BHU	Pramit Chowdhury, Shashank Deep, Sudip Pattanayek, Amit Mehndiratta [IIT Delhi], Rashmi Parihar [IIT Kanpur]	0:20
15:00	Detection, prevention, and removal of biofilms on catheters, dental and orthopedic implants	Sunil K. Khare Vikas Dubey	IIT Delhi IIT BHU	Shilpi Sharma [IIT Delhi]	0:20
15:20	Nanotheranostics for cancer	Ravi Aalinkeel, Dhirendra Khatti Ritu Kulshreshtha Sushant Shrivastava	UB IIT Kanpur IIT Delhi IIT BHU	Ruchi Chawla [IIT BHU], Ashish Patra [IIT Kanpur], K. V. Ramanujachary [Rowan University]	0:20
15:40	Portable sensor utilizing volatile organic compound in breath and body odor for remote and noninvasive point of care detection of diseases	T. Kundu Samaresh Das, Ankur Gupta/Thomas Thundat	IIT Bombay IIT Delhi IIT Delhi/UB	Ramgopal Rao, Amit Mehndiratta [IIT Delhi], T. Kundu, Soumyo Mukerji, Maryam Shojaej [IIT Bombay], Ritu Gupta [IIT Jodhpur], Shantanu Bhattacharya [IIT Kanpur]	0:20
16:00	Concluding Discussions and Team forming				0:20
16:20	<i>Tea (Central Square, IIT Delhi campus)</i>				0:20

Topic: Discussion on future projects on Biotechnology and Nanomedicine

Chairs: Vikas Dubey, IIT BHU
Supriya Mahajan, UB

	Speaker	Affiliation	Title	
16:40	John Tomaszewski	Pathology and Anatomical Sciences, UB	21st Century Diagnostic Medicine and Multi-Scale Spatial Biology	0:20
17:00	Stanley Schwartz	Medicine and Pediatrics, UB	Integrating Nanomedicine and Herbal Medicine for Healthcare	0:20
17:20	Vinod Tiwari	IIT BHU	Development of Novel Therapeutics for the Treatment of Traumatic Burn-injury and Frostbite-injury induced Chronic Pain in Military Veterans	0:20

17:40	Gyan Prakash Modi	IIT BHU	Development of novel NIRF probes as diagnostic and theranostic modalities for Alzheimer's disease	0:20
18:00	L.S. Shashidhara	Ashoka	Policy, Governance and Research Practices to Develop Technology for preventive and precision Healthcare in India	0:20
18:20	Soumik Siddhanta	IIT Delhi	Development of new class of probes for in-vivo Raman imaging	0:20
18:40	Conclude, depart for <i>Dinner</i>			