

## 22 JANUARY (FRI) 2021 INAUGURATION SESSION



Chair: **Prof. Suresh Bhalla, IIT Delhi**



6:00 PM: Welcome address, **Prof. Suresh Bhalla, Chair, FT 21**  
6:05 PM: Address by **Prof. G. V. Ramana**, Head, Civil Engineering, IIT Delhi  
6:10 PM: Address by **Prof. Ravindra K. Dhir (OBE)**, Chief Guest  
6:20 PM: Address by **Prof. Satish Chandra, Director CSIR-CRRI**, Guest of Honour  
6:30 PM: Conferring Lifetime Achievement Award to **Prof. Soh Chee-Kiong**  
6:35 PM: Diamond Keynote: "Four Decades of Research Journey", **Prof. Soh Chee-Kiong**  
7:15 PM: Remembering contributions of **Prof. Soh Chee-Kiong**  
7:45 PM: Vote of Thanks, **Dr. Sumit Balgavhar, Organizing Secretary, FT 21**



Delhi, India	Fri, 22 Jan 2021 at 18:00 IST
San Francisco, USA	Fri, 22 Jan 2021 at 04:30 PST
New York, USA	Fri, 22 Jan 2021 at 07:30 EST
London, United Kingdom	Fri, 22 Jan 2021 at 12:30 GMT
Cape Town, South Africa	Fri, 22 Jan 2021 at 14:30 SAST
Singapore, Hong Kong	Fri, 22 Jan 2021 at 20:30 SGT
Tokyo, Japan	Fri, 22 Jan 2021 at 21:30 JST
Sydney, Australia	Fri, 22 Jan 2021 at 23:30 AEDT
Auckland, New Zealand	Sat, 23 Jan 2021 at 01:30 NZDT

## 23 JANUARY (SAT) 2021 MORNING SESSIONS

Delhi, India	Sat, 23 Jan 2021 at 09:00 IST
San Francisco, USA	Fri, 22 Jan 2021 at 19:30 PST
New York, USA	Fri, 22 Jan 2021 at 22:30 EST
London, United Kingdom	Sat, 23 Jan 2021 at 03:30 GMT
Cape Town, South Africa	Sat, 23 Jan 2021 at 05:30 SAST
Singapore/ Hong Kong	Sat, 23 Jan 2021 at 11:30 SGT
Tokyo, Japan	Sat, 23 Jan 2021 at 12:30 JST
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Plenary Session: #23MP Chair: **Prof. Naveet Kaur, CSIR-Central Road Research Institute (CRR)**  
CSIR- Academy of Scientific and Innovative Research (AcSIR)



9:00-9:30 AM: Keynote 2: "Futuristic Structural Health Monitoring"  
**Prof. Santosh Kapuria, Director, CSIR-Structural Engineering Research Centre (SERC)**

9:30-10:00 AM: Keynote 3: "Field Monitoring of a Super Tall Structure"  
**Prof. Xia Yong, Hong Kong Polytechnic University**



HALL (A): #23MA, FUTURISTIC SHM (I)  
Dedicated to: **Prof. Santosh Kapuria, CSIR-SERC**  
Chair: **Prof. Naveet Kaur, CSIR-CRRI and AcSIR**

Parallel  
Session



10:15-10:30 AM #FT21031 Parametric study of an Euler beam-piezo-bond-system for SHM using refined shear lag model, Anant S. Bahl, Suresh Bhalla  
10:30-10:45 AM #FT21032 Numerical approach for health monitoring of bacterial concrete structure using EMI technique, Krishna Kumar Maurya, Anupam Rawat, Rama Shanker  
10:45-11:00 AM #FT21040 Review of residual stress estimation in a uniaxially loaded concrete member using ultrasonic pulse velocity, Aayush Joshi, Kranti Jain  
11:00-11:15 AM #FT21041 Prediction of carbonation severity in concrete structure by numerical approach, Achint Ranjan, Rama Shanker  
11:15-11:30 AM #FT21042 Health monitoring of structures using numerical approach of EMI technique, Brajesh Rajpoot, Rama Shanker, Varun Singh  
11:30-11:45 AM #FT21045 Effects of dimension and material on the signature of a coupled system in EMI technique, Sachin Kumar Singh, Rama Shanker, Achint Ranjan  
11:45-12:00 AM #FT21020 IOT sensors: a key element to change the future of structural health monitoring, Praveen Kumar Yadav

HALL (B): #23MB, FUTURISTIC DYNAMICS  
Dedicated to: **Prof. Xia Yong, HKPU**  
Chair: **Prof. Sahil Bansal, IIT Delhi**

Parallel  
Session



10:15-10:30 AM #FT21057 Vibration control of bridges using different configuration of tuned mass damper, Susmita Panda, Arnab Banerjee, Bappaditya Manna  
10:30-10:45 AM #FT21013 Dynamic analysis of a 15 MW floating offshore wind turbine, Ramya Niranjana, Srinivasa B. Ramisetty  
10:45-11:00 AM #FT21012 Fatigue damage assessment of axially vibrating steel bar considering opening stress in crack propagation stage, Anjali J Pillai, Sudip Talukdar  
11:00-11:15 AM #FT21056 Flexural wave propagation study through elastic rigid combined beam, Abhinav Sandipkumar, Bhatt, Rajan Prasad, Arnab Banerjee  
11:15-11:30 AM #FT21067 Seismic performance of hybrid passive device and characterization of its multi phase behaviour, Mahesh Babu Addala, Suresh Bhalla, Alok Madan  
11:30-11:45 AM #FT21065 Modelling of futuristic exponentially graded rotor bearing system for dynamic analysis, Bharath Obalareddy, Aneesh Batchu, Prabhakar Sathujoda

### 11:45AM POSTER PRESENTATIONS

#FT21023, Potential of progressive collapse for regular and irregular RC framed structure, Souraj Kumar Gupta, Kranti Jain  
#FT21035, Stability of elevated retaining structures under seismic loading  
K Senthil, Divyansh Tiwari

## 23 JANUARY (SAT) 2021 EVENING SESSIONS

Delhi, India Sat, 23 Jan 2021 at 18:00 IST  
San Francisco, USA Sat, 23 Jan 2021 at 04:30 PST  
New York, USA Sat, 23 Jan 2021 at 07:30 EST  
London, United Kingdom Sat, 23 Jan 2021 at 12:30 GMT  
Cape Town, South Africa Sat, 23 Jan 2021 at 14:30 SAST  
Singapore, Hong Kong Sat, 23 Jan 2021 at 20:30 SGT  
Tokyo, Japan Sat, 23 Jan 2021 at 21:30 JST  
Sydney, Australia Sat, 23 Jan 2021 at 23:30 AEDT  
Auckland, New Zealand Sun, 24 Jan 2021 at 01:30 NZDT



### Plenary Session: #23EP

Chair: **Prof. Arnab Banerjee, IIT Delhi**

6:00-6:30 PM: Keynote 4: "Advances in Structural Health Monitoring of Concrete Arch Dams"  
**Prof. Pilate Moyo, University of Cape Town**



6:30-7:00 PM: Keynote 5: "Dynamic Characteristics of 2D Lattice Metamaterials"  
**Prof. Sandipon Adhikari, University of Swansea**



### Parallel Session

**HALL (A): #23EA, METAMATERIALS**  
Dedicated to: **Prof. Sandipon Adhikari**  
Chair: **Prof. Arnab Banerjee, IIT Delhi**



**7:15-7:30 PM #FT21055** Realization of coupled shear wall building as metamaterial inspired structural unit, *Jyotirajan Moharana, Rajan Prasad, Avisek Mukherjee, Arnab Banerjee*  
**7:30-7:45 PM #FT21053** Sensitivity analysis of the elastic moduli of honeycomb lattice metamaterials, *Prakhar Sinha, Tanmoy Mukhopadhyay*  
**7:45-8:00 PM #FT21058** Study on graphene oxide as advanced nano-material to improve the performance characteristics of high strength self-compacting concrete, *Boppana Narendra Kumar, M. Somasri*  
**8:00-8:15 PM #FT21059** Impact on advanced engineered materials in cement composites for urban resilient infrastructure development, *Boppana Narendra Kumar, Vinod Kumar.G*  
**8:15-8:30 PM #FT21062** Periodic structures and time-varying dynamical systems: A role reversal of space and time, *Abhijit Sarkar, Rajan Prasad*

### Parallel Session

**HALL (B): #23EB, FUTURISTIC SHM (II)**  
Dedicated to: **Prof. Pilate Moyo**  
Chair: **Prof. Prateek Negi, GBPIET**



**7:15-7:30 PM #FT21019** Piezo-sensor based strain modal testing for SHM  
*Dattar Singh Aulakh, Suresh Bhalla*  
**7:30-7:45 PM #FT21043** Damage investigation in bridge structure using EMI technique, *Varun Singh, Rama Shanker, Asit Kumar, Vivekanand, Ayush Kumar Singh, Abhishek Kumar Singh*  
**7:45-8:00 PM #FT21033** Electro-mechanical impedance investigations on piezo-bond-structure system through analytical cum numerical modelling, *Siddharth Singh Tanwar, Suresh Bhalla*  
**8:00-8:15 PM #FT21022** Structural health monitoring of colossal statues  
*Savitha Sagari Srinivasan, Sharvil Alex Faroz*  
**8:15-8:30 PM #FT21021** Structural health monitoring of metros, *Savitha Sagari Srinivasan, Sriprya Rengaraju, L R Manjunatha*  
**8:30-8:45 PM #FT21048** Health monitoring of structures using time-frequency analysis of acoustic emission signatures, *M V Chilukuri, Prema Sarkar*  
**8:45-9:00 PM #FT21044** Investigation of shear lag effect for EMI technique using numerical approach, *Tejveer Singh Pundhir, Rama Shanker, Varun Singh*

## 24 JANUARY (SUN) 2021 MORNING SESSIONS

Delhi, India Sun, 24 Jan 2021 at 09:00 IST  
San Francisco, USA Sat, 23 Jan 2021 at 19:30 PST  
New York, USA Sat, 23 Jan 2021 at 22:30 EST  
London, United Kingdom Sun, 24 Jan 2021 at 03:30 GMT  
Cape Town, South Africa Sun, 24 Jan 2021 at 05:30 SAST  
Singapore/ Hong Kong Sun, 24 Jan 2021 at 11:30 SGT  
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Auckland, New Zealand Sun, 24 Jan 2021 at 16:30 NZDT



### Plenary Session: #24MP

Chair: **Prof. Visalakshi Talakokula, Bennett University**



9:00-9:30 AM: Keynote 6: "The Concrete of the Future: Challenges and Opportunities"  
**Prof. Fernando Martirena, Universidad Central de las Villas, Cuba**

9:30-10:00 AM: Keynote 7: "Performance of concrete block made with recycled concrete aggregates: from laboratory to industrial scale"  
**Prof. Zengfeng ZHAO, University of Liege/ Tongji**



### Parallel Session

**HALL (B): #24MA, FUTURISTIC CONSTRUCTION MATERIALS**  
Dedicated to: **Prof. Fernando Martinena**  
Chair: **Prof. Visalakshi Talakokula, Bennet University**



**10:15-10:30 AM #FT21002** Sustainability in construction sector, *Sushil Kumar Dhawan*  
**10:30-10:45 AM #FT21008** Comparative study of strengthening of circular concrete column using soft FRP, *Md Mozaffar Masud, A K L Srivastava*  
**10:45-11:00 AM #FT21064** Strength and microstructural properties of concrete with micronized biomass silica and waste PCB powder  
*Kunal Kakria, Shanmuga Priya T*

### 11:00 AM POSTER PRESENTATION

**#FT21052**, Properties of geopolymer composites using activated pond ash, *Nishanth B H, R V Ranganath, L R Manjunath, Nishanth BH, Vidyadhara V*

### Parallel Session

**HALL (B): #24MB, FUTURISTIC RETROFITTING**  
Dedicated to: **Prof. Zengfeng ZHAO**  
Chair: **Prof. Dr. Prateek Negi**



**10:15-10:30 AM #FT21026** EMI based health monitoring- application to retrofitted beam-column joint, *Tejas S. Shelgaonkar, Suraj Khante*  
**10:30-10:45 AM #FT21010** Retrofitting and strengthening techniques applied on damaged RCC prism using geopolymer, *Arnab Sinha S. Talukdar, Sudip Talukdar*  
**10:45-11:00 AM #FT2103** Analysis of structural engineering problems based on futuristic connection definitions  
*Narayan, Krishna Kant Pathak*



Plenary Session: #24ANP

Chair: **Prof. Rama Shanker, Motilal Nehru National Institute of Technology, Prayagraj**



**2:00-2:30 PM: Keynote 10: "Advances in Human Motion Based Piezoelectric Energy Harvesting"**  
**Prof. Yee Yan Lim, Southern Cross University, Australia**

**2:30-3:00 PM: Keynote 11: "Biomedical Health Monitoring Using Sensor Actuator System of Smart Materials"**  
**Prof. Shashank Srivastava, IGNOU**



Parallel  
Session

**HALL (A): #24ANA, Futuristic Energy Solutions**  
Dedicated to: **Prof. Yee Yan Lim**  
Chair: **Prof. Rama Shanker, MNNIT Prayagraj**



**3:15-3:30 PM #FT21030** Enhanced nucleation flow-boiling technology for electronic cooling and resulting energy efficiency for data centres  
*Amitabh Narain, Divya Pandya, Atharva Rahane, Soroush Sepahyar, Vibhu Vivek*  
**3:30-3:45 PM #FT21054** A mini review on the effect of cleaning strategies on productivity of various solar thermal collectors, *Dinesh Kumar Sharma, Dilip Sharma, Ahmed Hamza H Ali*  
**3:45-4:00 PM #FT21011** Methodology for power generation by utilization of high-rise building, *Nitin Kumar, Om Prakash*  
**4:00-4:15 PM #FT21016** A comprehensive, one dimensional, steady, heat transfer analysis for the receiver as in parabolic trough collector  
*Abhishek Singh Yadav, Laitu Chandra, Jahar Sarkar*  
**4:15 PM: POSTER PRESENTATIONS**  
**#FT21036**, Identification of groundwater recharge potential zones using geospatial techniques, *V. Siri Chandana, Dr. Reshma Talari, Pratyush Behera, Bharadwaja*

Parallel  
Session

**HALL (B): #24ANB, Futuristic Bio-medical & Other Applications**  
Dedicated to: **Prof. Shashank Srivastava**  
Chair: **Dr. Sumit Balgavhar, IIT Delhi**



**3:15-3:30 PM #FT21038** An experimental investigation on bovine cortical bone using Cowper-Symonds model, *Prasannavenkadesan V Ponnusamy Pandithavan*  
**3:30-3:45 PM #FT21001** Thrust performance of insect inspired propulsion for bio-inspired MAVs, *Naga Praveen Babu Mannam, P. Rajalakshmi*  
**3:45-4:00 PM #FT21047** Study of rigid pavement for varying conditions using kenpave, *Saurabh Singh, Shubham Pandey, Anupam Rawat*  
**4:00-4:15 PM #FT21024** Plantar pressure measurement using piezo-sensors system, *Ajaya Kumar Das*  
**4:15 PM: POSTER PRESENTATIONS**  
**#FT21005**, Surface runoff estimation for an agricultural watershed using NRCS method and geospatial techniques, *Rajkumar Tammiseti, Talaria Reshma, Savitha, Chirasammya*  
**#FT21029**, Analysis and monitoring the health of the agriculture watershed using geospatial technologies, *Savitha Chirasamayee, T Reshma, Rajkumar Tammiseti*



Plenary Session: #24EP Chair: **Prof. Sumedha Moharana, Shiv Nader University**

**6:00-7:00 PM: Keynote 8: "SASS: An Aid to Implementing Futuristic Technologies"**  
**Prof. Chanakya Arya, University College of London**

**7:00-7:30 PM: Keynote 9: "Multi-Sensor Data Fusion by Least Squares Estimation for Structural Health Monitoring"**  
**Prof. Samit Ray Chaudhuri, IIT Kanpur**



GENERAL PAPER PRESENTATIONS: Session #24EP continued....

Chair: **Prof. Sumedha Moharana, IIT Delhi**

Dedicated to: **Prof. Chanakya Arya and Prof. Samit Ray Chaudhuri**

**7:30-7:45 PM #FT21017**, A machine learning approach to fretting fatigue problem, *Sachin Singh Gautam, Santoki Kashyap Vithalbhair*  
**7:45-8:00 PM #FT21028**, Machine learning based ultrasonic image segmentation for damage evaluation in concrete, *Suhaib Ul Reyaz, Surendra Beniwal*  
**8:00-8:15 PM #FT21034**, Artificial intelligence enabled structural system identification, *Raushan Kumar Ravi, Suresh Bhalla, A K Jain, Shashank Srivastava*

International Conference  
on  
FUTURISTIC TECHNOLOGIES  
22-24 Jan 2021

## 24 JANUARY (SUN) 2021 VALEDICTION SESSION

Delhi, India	Sun, 24 Jan 2021 at 20:30 IST
San Francisco, USA	Sun, 24 Jan 2021 at 07:00 PST
New York, USA	Sun, 24 Jan 2021 at 10:00 EST
London, United Kingdom	Sun, 24 Jan 2021 at 15:00 GMT
Cape Town, South Africa	Sun, 24 Jan 2021 at 17:00 SAST
Singapore, Hong Kong	Sun, 24 Jan 2021 at 23:00 SGT
Tokyo, Japan	Mon, 25 Jan 2021 at 00:00 JST
Sydney, Australia	Mon, 25 Jan 2021 at 02:00 AEDT
Auckland, New Zealand	Mon, 25 Jan 2021 at 04:00 NZDT



Plenary Session: #24EV Chair: *Prof. Sumedha Moharana, Shiv Nader University*



**8:30-9:00 PM: Gold Keynote 12:**  
**“Engineered Bamboo: A Futuristic Structural Material”**  
***Prof. Roger West, Trinity College, Dublin***



### 9:00-9:10 PM: POSTER PRESENTATIONS

- #FT21066: **Fabrication and testing of engineered bamboo beams in flexure,**  
*Vasudha Rani Bhagat, Suresh Bhalla, Diwakar Bhagat, Sudhakar Deo Bhagat*
- #FT21068: **Computational analysis of 2x2 matrix fibre reinforced bamboo composite (FRBC) beams**  
*Vaishali Bansal, Diwakar Bhagat, Suresh Bhalla*

**9:10 PM:** Announcement of Best Paper/ Poster Awards, *Prof. Sumedha Moharana*

**9:20 PM:** Closure and Vote of Thanks, *Dr. Sumit Balgavhar*