

# IEEE NTC Forum on Nanotechnology Focus – Machine Learning and Nanomechanics

21 – 22 October 2023 | Paestum (Salerno), Italy

## Friday, 20 October, 2023

18:00 – 20:00 Welcome Dinner

## Saturday, 21 October, 2023

8:30 – 9:30 Breakfast

9:30 – 9:45 Opening Remarks (15 minutes)  
— Xiaoying Zhuang, Leibniz University Hannover

9:45 – 10:00 Keynote Talk (15 minutes)  
— James E. Morris, Portland State University  
• Introduction to the IEEE Nanotechnology Council (NTC)

10:00 – 10:30 Invited Talk I (30 minutes)  
— Jakob Schwiedrzik, Empa Swiss Federal Laboratories for Materials Science and Technology  
• Nanomechanics under extreme conditions for the development of novel metamaterials

10:30 – 10:50 Coffee Break (20 minutes)

10:50 – 11:20 Invited Talk II (30 minutes)  
— Yabin Jin, Tongji University  
• Intelligent design of phononic metamaterials with machine learning

11:20 – 11:50 Invited Talk III (30 minutes)  
— Binh Huy Nguyen, Katholieke Universiteit Leuven  
• Machine learning-assisted techniques in MEMS design and characterization

11:50 – 12:10 Panel Discussion I (20 minutes)

12:10 – 13:40 Lunch (90 minutes)

13:40 – 14:10 Invited Talk IV (30 minutes)  
— James E. Morris, Portland State University  
• Electronic conduction in discontinuous metal nanoparticle thin films: A detective story

14:10 – 14:40 Invited Talk V (30 minutes)  
— Timon Rabczuk, Bauhaus University Weimar  
• Scientific machine learning and application in materials design

14:40 – 15:00 Coffee Break (20 minutes)

15:00 – 15:30 Invited Talk VI (30 minutes)  
— Kirsten Weide-Zaage, Leibniz University Hannover  
• Data management in the reliability simulation of microelectronic components

15:30 – 16:00 Invited Talk VII (30 minutes)  
— Qiong Liu, Leibniz University Hannover  
• Flexoelectricity of two-dimensional (2D) materials studied using piezoelectric force microscopy (PFM)

16:00 – 16:20 Panel Discussion II (20 minutes) closed session

16:20 – 17:05 NTC Technical Committee Discussion (45 minutes) closed session  
— Future plan  
— Preparatory of committee member

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17:05 – 18:30 Reception and participants free discussion

18:30 – 20:00 Dinner

## Sunday, 22 October, 2023

8:30 – 9:30 Breakfast

9:30 – 10:00 **Invited Talk VIII (30 minutes)**  
— Xiaoying Zhuang, Leibniz University Hannover  
• Machine learning for inverse materials design and multiscale mechanics

10:00 – 10:30 **Invited Talk IX (30 minutes)**  
— Antonio Di Bartolomeo, Università degli Studi di Salerno  
• 2D materials based field-effect transistors as photodetectors and sensors

10:30 – 11:00 **Invited Talk X (30 minutes)**  
— Jianying He, Norwegian University of Science and Technology  
• Probing nanomechanical properties of additively manufactured high entropy alloys

11:00 – 11:20 Coffee Break (20 minutes)

11:20 – 11:50 **Invited Talk XI (30 minutes)**  
— Quanzhou Yao, Southern University of Science and Technology  
• An application of machine learning in nano-Tribology: statistics on the stick-slip events

11:50 – 12:20 **Invited Talk XII (30 minutes)**  
— Teresa Cheng, Leibniz University Hannover  
• Nanomechanics of energy nanogenerators: triboelectric nanogenerators and piezoelectric nanogenerators

12:20 – 12:40 Panel Discussion III (20 minutes) closed session

12:40 – 12:55 **Concluding Remarks (15 minutes)**  
— Xiaoying Zhuang, Leibniz University Hannover

12:55 – 13:55 Lunch (60 minutes)

14:00 Adjourn

Dinner provided for 20, 21, and 22 Oct

Lunch provided for 21, 22, and 23 Oct

Accommodation provided for 20 – 23 Oct