

# 2022 AFOSR/NSF Technical Exchange on Biophysics and Nanomanufacturing

Dr. Sofi Bin-Salamon | September 15-16, 2022 | Washington, DC

School of Advanced International Studies  
Johns Hopkins University  
1740 Massachusetts Avenue, NW  
Washington, DC 20036

Day 1: Thursday, 15 September 2022

## Introduction

0915-0930	Welcome Remarks	<p><b>Dr. Sofi Bin-Salamon</b> Program Manager Air Force Office of Scientific Research</p> <p><b>Dr. Khershed Cooper</b> Program Director National Science Foundation</p>
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## Research Challenges

0930-0950	Extracellular matrix analogues for embedding fluorescent nanodiamonds	<p><b>Prof. Luigi Ambrosio</b> Institute of Polymers, Composites, and Biomaterials National Research Council of Italy</p>
0950-1010	Barriers in sensing brain cells: lessons from 2D and 3D system	<p><b>Dr. Valentina Benfenati</b> Institute for Organic Synthesis and Photoreactivity National Research Council of Italy</p> <p><b>Dr. Andrea Candini</b> Institute for Organic Synthesis and Photoreactivity National Research Council of Italy</p>
1010-1030	Smart nanomaterials to investigate electrical activity of excitable cells	<p><b>Dr. Annalisa Convertino</b> Institute of Microelectronics and Microsystems National Research Council of Italy</p>
1030-1050	Nanodiamonds Living Systems Interface: Measure, Sense and Operate: Challenges	<p><b>Dr. Roberto Zamboni</b> Institute for Organic Synthesis and Photoreactivity National Research Council of Italy</p>
1050-1110	<b>BREAK</b>	
1110-1130	Nano-manufacturing of Diamond Crystals Containing Nitrogen-Vacancy Centers for Quantum Electronics and Biosensing	<p><b>Prof. Raj N. Singh</b> Department of Materials Science and Engineering Oklahoma State University</p>

<b>1130-1150</b>	New strategies for synthesis and characterization of doped nanodiamonds	<b>Prof. Mohan Sankaran</b> Department of Nuclear, Plasma and Radiological Engineering University of Illinois-Urbana Champaign
<b>1150-1230</b>	Confined laser shock detonation for NV nanodiamonds manufacturing: challenges	<b>Prof. Qiong Nian</b> Department of Engineering of Matter, Transport and Energy Arizona State University  <b>Prof. Yiliang (Leon) Liao</b> Department of Industrial & Manufacturing Systems Engineering Iowa State University
<b>1230-1330</b>	<b>LUNCH</b>	
<b>1330-1350</b>	Fluorescent nanodiamond for quantum imaging: challenges	<b>Prof. Andrew Greentree</b> ARC Centre of Excellence for NanoBiophotonics Royal Melbourne Institute of Technology University
<b>1350-1410</b>	Quantum sensors of mitochondrial metabolism: Challenges and opportunities	<b>Prof. Peter Burke</b> Department of Electrical Engineering and Computer Science University of California, Irvine
<b>1410-1430</b>	Engineering nanodiamonds for superior sensing performance and future scalability	<b>Prof. Philip Hemmer</b> Department of Electrical and Computer Engineering Texas A&M University
<b>1430-1450</b>	Engineering point defect distribution and surface reconstructions at non-equilibrium conditions	<b>Prof. Peter Pauzauskie</b> Department of Materials Science and Engineering Washington University
<b>1450-1510</b>	<b>BREAK</b>	
<b>1510-1530</b>	Light-modulation of biological/semiconductor interfaces for affecting cell growth and artificial retina development	<b>Prof. Thomas Brown</b> Centre for Hybrid and Organic Solar Energy University of Rome, Tor Vergata
<b>1530-1550</b>	Assembling and characterization of carbon nano-composites	<b>Dr. Vincenzo Palermo</b> Institute for Organic Synthesis and Photoreactivity National Research Council of Italy
<b>1550-1610</b>	Avenues for International Collaboration	<b>Mr. Giulio Busulini</b> Institute for Organic Synthesis and Photoreactivity National Research Council of Italy
<b>1610-1630</b>	Smart sensing non-classical biology	<b>Dr. Larry Nagahara</b> Whiting School of Engineering Johns Hopkins University

<b>1630-1730</b>	<b>Closing Discussion</b>
<b>1730</b>	<b>MEETING ADJOURNED</b>

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Day 2: Friday, 16 September 2022

## Scientific Opportunities

<b>0915-1015</b>	Opportunities in Biophysics	
<b>1015-1045</b>	<b>BREAK</b>	
<b>1045-1145</b>	Opportunities in Nanomanufacturing	
<b>1145-1200</b>	Closing Remarks	<b>Dr. Sofi Bin-Salamon</b> Program Manager Air Force Office of Scientific Research  <b>Dr. Khershed Cooper</b> Program Director National Science Foundation
<b>1200</b>	<b>CONCLUSION</b>	