

# 3<sup>rd</sup> International Workshop on Quantum and Topological Nanophotonics

Nanyang Technological University, Singapore  
12-14 December 2019

Organized by:

Centre for Disruptive Photonics Technologies, NTU Singapore  
in collaboration with  
California Institute of Technology & Stanford University, USA

Program Committee:

**Harry Atwater**, Caltech, USA – Prog. Co-Chair  
**Nikolay Zheludev**, NTU, Singapore & Southampton, UK – Prog. Co-Chair  
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Center for Disruptive Photonic Technologies, NTU  
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<b>Thursday 12 Dec 2019</b>	
<b>08:45</b>	<b>Registration</b> <b>Auditorium - Nanyang Executive Centre, NTU</b>
<b>09:00</b>	<b>Opening remarks (Harry Atwater &amp; Nikolay Zheludev)</b>
<b>09:05</b>	<b>Guest of Honor</b>
<b>09:15</b>	<b>QTN group photo</b>
	<b>QN1. Quantum Nanophotonics 1 - Chair: Prof Nikolay Zheludev</b>
<b>09:30</b>	<b>Prof Jean Jacques Greffet (Institut d'Optique, Université Paris Sud, France)</b> <i>Tailoring quantum light emission using resonators and collective effects</i>
<b>10:00</b>	<b>Prof Weibo Gao (Nanyang Technological University, Singapore)</b> <i>Optical gating of resonance fluorescence from GeV color center in diamond</i>
<b>10:20</b>	<b>Dr Logan Wang Su (Stanford University, USA)</b> <i>TBA</i>
<b>10:50</b>	<b>Coffee &amp; Tea Break</b>
	<b>TN1. Topological Nanophotonics 1 - Chair: Prof Harry Atwater</b>
<b>11:20</b>	<b>Prof Moti Segev (TECHNION, Israel)</b> <i>New ideas in topological photonics</i>
<b>11:50</b>	<b>Prof Justin Song (Nanyang Technological University, Singapore)</b> <i>Spontaneous symmetry breaking in collective modes and plasmonic ferromagnetism</i>
<b>12:10</b>	<b>Prof Alexander Khanikaev (CUNY, USA)</b> <i>New class of photonic higher-order topological states induced by long range interactions</i>
<b>12:40</b>	<b>Lunch Break &amp; Poster Session 1 (PS1)</b>
	<b>QN2. Quantum Nanophotonics 2 - Chair: Prof Gennady Shvets</b>
<b>14:00</b>	<b>Prof Javier García de Abajo (ICFO, Spain)</b> <i>Quantum aspects of free-electron interactions with nanophotonic structures</i>
<b>14:30</b>	<b>Dr Yvonne Gao (A*STAR, Singapore)</b> <i>Engineering On-Demand Interactions between Bosonic Quantum Modes</i>
<b>15:00</b>	<b>Prof Cun-Zheng Ning (Tsinghua University &amp; Arizona State University, China/USA)</b> <i>Ten Years of Plasmonic Nanolasers: Progress and Prospects</i>
	<b>Coffee &amp; Tea Break</b>
	<b>TN2. Topological Nanophotonics 2 - Chair: Prof Rob Simpson</b>
<b>15:30</b>	<b>Prof Gennady Shvets (Cornell University, USA)</b> <i>Emulating exotic spin-valley topological phases using photonic structures</i>
<b>16:00</b>	<b>Prof Ranjan Singh (Nanyang Technological University, Singapore)</b> <i>All-silicon terahertz topological photonics: A step towards 6G communications</i>
<b>16:30</b>	<b>Dr Ilya Kuprov (University of Southampton, UK)</b> <i>Toroidal transitions in atoms and molecules - A chemist's view</i>
<b>17:00</b>	<b>End of Day 1</b>

**Friday 13 Dec 2019**

08:45	<b>Registration</b> Auditorium - Nanyang Executive Centre, NTU
	<b>QN3. Quantum Nanophotonics 3 - Chair: Prof Mark Brongersma</b>
09:00	<b>Prof Dimitri Basov (Columbia University, USA)</b> <i>Quantum photonic crystals for nano-light (tentative)</i>
09:30	<b>Dr Anna Paterova (A*STAR, Singapore)</b> <i>Quantum metrology with nonlinear interferometers</i>
09:50	<b>Prof Alex Hayat (TECHNION, Israel)</b> TBA
10:20	<b>Coffee &amp; Tea Break</b>
	<b>TN3. Topological Nanophotonics 3 - Chair: Prof Cesare Soci</b>
10:50	<b>Prof Yuri Kivshar (Australian National University, Australia)</b> <i>Nonlinear and topological metaphotonics</i>
11:20	<b>Prof Baile Zhang (Nanyang Technological University, Singapore)</b> <i>3D topological light and sound</i>
11:50	<b>Prof Mark Dennis (University of Birmingham, UK)</b> <i>Topological textures in structured light</i>
12:20	<b>Lunch Break &amp; Poster Session 2 (PS2)</b>
	<b>QTN1. Quantum and Topological Nanophotonics 1 - Chair: Prof Yuri Kivshar</b>
13:50	<b>Prof Kobus Kuipers (TU Delft, Netherlands)</b> <i>Light twist showing the way</i>
14:20	<b>IAS@NTU Speaker</b> <b>Prof Nikolay Zheludev (NTU, Singapore &amp; University of Southampton, UK)</b> <i>Deeply Subwavelength Super-Oscillatory Imaging</i>
14:50	<b>IAS@NTU Speaker</b> <b>Prof Mark Brongersma (Stanford University, USA)</b> <i>Dynamic 2D Quantum Metasurfaces</i>
15:20	<b>Coffee &amp; Tea Break</b>
	<b>TN4. Topological Nanophotonics 4 - Chair: Prof Moti Segev</b>
15:50	<b>Prof Yidong Chong (Nanyang Technological University, Singapore)</b> <i>A bulk-edge correspondence principle based on supersymmetry</i>
16:10	<b>Prof Mohammed Hafezi (University of Maryland, USA)</b> <i>Topological interplay between photons and electrons</i>
16:30	<b>Prof Christos Panagopoulos (Nanyang Technological University, Singapore)</b> <i>Axisymmetric topological solitons for nanomagnetism</i>
17:00	<b>End of Day 2</b>

**Saturday 14 Dec 2019**

08:45	<b>Registration</b> <b>Auditorium - Nanyang Executive Centre, NTU</b>
	<b>TN5. Topological Nanophotonics 5 - Chair: Dr Jinghua Teng</b>
09:00	<b>Prof Harald Giessen (University of Stuttgart, Germany)</b> <i>Topological plasmonics – watching the vector dynamics of skyrmions</i>
09:30	<b>Prof Qijie Wang (Nanyang Technological University, Singapore)</b> <i>Photonic topological quantum cascade lasers</i>
09:50	<b>Prof Natalia Litchinitser (Duke University, USA)</b> <i>Optically tunable topological photonic crystals</i>
10:10	<b>Prof Shaffique Adam (National University of Singapore, Singapore)</b> <i>The role of topology and electron-electron interactions in two-dimensional electronic materials</i>
10:30	<b>Coffee &amp; Tea Break</b>
	<b>QTN2. Quantum and Topological Nanophotonics 2 - Chair: Prof Javier Garcia de Abajo</b>
11:10	<u><b>IAS@NTU Speaker</b></u> <b>Prof Harry Atwater (CALTECH, USA)</b> <i>TBA</i>
11:40	<b>Prof Cheng Wei Qiu (National University of Singapore, Singapore)</b> <i>Some unexpected opportunities in parity-time symmetry and exceptional-point physics</i>
12:00	<b>Prof Shanhui Fan (Stanford University, USA)</b> <i>Topological and quantum photonics in synthetic dimensions (tentative)</i>
12:30	<b>Jennifer Dionne (Stanford University, USA)</b> <i>TBA</i>
13:00	<b>Closing Remarks &amp; End of Technical Program</b>