

## SPP 1839 Spring School

May 15 - May 17, Karlsruhe, Germany

All lectures will be given at the Gastdozentenhaus Karlsruhe (Engesserstraße 3, 76131 Karlsruhe).

Monday, May 15

Time	Speaker	Content (selected keywords)
<b>9:15</b>	<b>Welcome &amp; opening remarks</b>	
<b>9:30</b>	W. L. Vos ( <i>Uni. of Twente</i> )	<ul style="list-style-type: none"> <li>(Multiple) light scattering in nanophotonic media (E.g. in photonic crystals)</li> </ul>
<b>11:00</b>	<b>Break</b>	
<b>11:15</b>	G. Gomard ( <i>KIT</i> )	<ul style="list-style-type: none"> <li>Scattering nanostructures for light management in solar cells &amp; light-emitting diodes</li> <li>Surface wrinkles as disordered diffraction gratings</li> <li>Bio-inspired light-harvesting structures</li> </ul>
<b>12:00</b>	<b>Lunch break</b>	
<b>13:00</b>	K. Vynck ( <i>LP2N, Uni. Bordeaux</i> )	<ul style="list-style-type: none"> <li>Multiple light scattering</li> <li>Short-range correlated disorder</li> <li>Anderson localization</li> <li>Light-trapping</li> <li>Anomalous diffusion</li> </ul>
<b>14:30</b>	<b>Break</b>	
<b>14:45</b>	E. Gurevich ( <i>Ruhr-Uni. Bochum</i> )	<ul style="list-style-type: none"> <li>Interaction of ultrashort laser pulses with metals</li> <li>Excitation of surface plasmons</li> <li>Analysis of hydrodynamic instabilities in laser-induced melt</li> <li>Applications of ordered &amp; disordered laser-induced nanostructures</li> </ul>
<b>15h30</b>	A. Mischok ( <i>Technische Uni. Dresden</i> )	<ul style="list-style-type: none"> <li>Resonator modes/cavities introduced by disorder</li> <li>Periodic &amp; aperiodic patterning of microcavities and its application to laser mode structuring</li> <li>Utilization of metal-organic cavities &amp; resulting Tamm-plasmon-polaritons</li> <li>Applications to organic lasers &amp; cavity-enhanced photodetectors</li> </ul>
<b>16:15</b>	<b>KIT Tour</b>	

Tuesday, May 16

Time	Speaker	Content (selected keywords)
9:00	C. Rockstuhl ( <i>KIT</i> )	<ul style="list-style-type: none"> <li>Impact of disorder in metasurfaces and metamaterials</li> <li>Top-down vs. bottom-up approaches to realize disordered metamaterials</li> </ul>
10:00	A. Petrov ( <i>Technische Uni. Hamburg</i> )	<ul style="list-style-type: none"> <li>Scattering in disordered structures with small refractive index contrast</li> <li>First-order Born approximation</li> <li>Ewald sphere construction</li> <li>Structural color effect</li> <li>Reciprocal space engineering</li> </ul>
11:00	<b>Break</b>	
11:15	A. Niemeyer ( <i>KIT</i> )	<ul style="list-style-type: none"> <li>(Diffusive) light propagation in disordered scattering media</li> <li>Cloaking in this regime</li> </ul>
12:00	<b>Lunch break</b>	
13:00	H. Fabritius ( <i>Max-Planck-Institut für Eisenforschung</i> )	<ul style="list-style-type: none"> <li>Diversity of biological photonic structures</li> <li>Strategies for tuning absorption, reflection, etc.</li> <li>Structure-composition-property relations in biological photonic structures</li> </ul>
13:45	G. von Freymann ( <i>Technische Uni. Kaiserslautern</i> )	<ul style="list-style-type: none"> <li>Fabrication with direct laser writing (3D laser lithography)</li> <li>Aperiodic deterministic structures</li> <li>Bio-inspired tailored disorder</li> <li>Optical transport measurements</li> </ul>
14:30	<b>Break</b>	
14h45	A. Consoli ( <i>Instituto de Ciencia de Materiales de Madrid</i> )	<ul style="list-style-type: none"> <li>Lasers &amp; optical cavities</li> <li>Theory of random lasers</li> </ul>
16:00	<b>B. Jahnen (DFG)</b>	
16:45	<b>Poster session &amp; dinner</b>	

Wednesday, May 17

Time	Speaker	Content (selected keywords)
9:00	C. Seassal / E. Drouard ( <i>Institut des Nanotechnologies de Lyon</i> )	<ul style="list-style-type: none"> <li>Pseudo-disordered photonic crystals for enhanced light matter interaction</li> <li>General modal properties</li> <li>Exhaustive study of light absorption enhancement in 1D pseudo-disordered thin membrane</li> <li>Statistical study &amp; optimization of light absorption in 2D pseudo-disordered thin solar cell</li> <li>Application to luminescence enhancement</li> </ul>
10:00	S. Mujumdar ( <i>Tata Institute of Fundamental Research</i> )	<ul style="list-style-type: none"> <li>Concept of random lasing: diffusive &amp; coherent</li> <li>Light diffusion and gain: Levy (Power-law) intensity statistics</li> <li>Periodic-on-average random systems: Gap state lasing &amp; related phenomena</li> <li>Anderson localization lasing: Lifetime distributions of localized modes</li> </ul>
11:00	<b>Break</b>	
11:15	W. Pernice ( <i>Westfälische Wilhelms-Uni. Münster</i> )	<ul style="list-style-type: none"> <li>Nanophotonic devices</li> <li>Compact spectrometers</li> <li>Ballistic photon transport</li> </ul>
12:00	<b>Lunch break</b>	
13:00	C. Lienau ( <i>Uni. Oldenburg</i> )	<ul style="list-style-type: none"> <li>Localization of excitons &amp; plasmons in disordered media</li> <li>Near-field &amp; ultrafast spectroscopy of localized excitons</li> <li>Localization of plasmons in disordered metallic films</li> <li>Linear &amp; nonlinear spectroscopy of randomly localized plasmons</li> <li>Statistical analyses of exciton &amp; plasmon localization</li> <li>Overview of Anderson localization of excitons &amp; plasmons in disordered media</li> </ul>
13:45	T. Weiss ( <i>Uni. Stuttgart</i> )	<ul style="list-style-type: none"> <li>Resonant state expansion</li> <li>Mode normalization</li> <li>Numerical modeling of disordered photonic systems</li> </ul>
14:30	<b>Break</b>	
14h45	F.-J. Haug ( <i>EPFL</i> )	<ul style="list-style-type: none"> <li>Silicon solar cells</li> <li>Light-trapping</li> <li>Interface textures</li> </ul>
16:00	<b>Concluding remarks</b>	