Lattice plasmons nanolasing

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Plasmonic lattices, known for supporting surface lattice resonances (SLRs), are pivotal in the advancement of nanophotonics, enabling intricate exploration and manipulation of light-matter interactions at the nanoscale. In this talk, we present a novel and efficient fabrication methodology that allows for the generation of various plasmonic lattices with distinct symmetries, showcasing the versatility of our approach. This technique paves the way for a comprehensive investigation into room-temperature stable nanolasing between SLRs and dye molecules by suppressing radiative and nonradiative losses. The incorporation of momentum space imaging system further refines our study by providing detailed visualization of the lasing modes. The employment of a wide range of gain mediums, including dye molecules, rare earth elements, and perovskites, enriches the lasing performance. This multifaceted approach not only deepens our understanding of SLRs but also significantly widens the scope of potential applications in cutting-edge nanophotonic devices, marking a milestone in the field.

Short Bio:

Wenxin Wang received his Ph.D. degree in Technical Physics from TU Ilmenau, Germany. He is a professor at Harbin Engineer University, China. His research interests include lattice plasmons, nanolasing, and strong coupling. Currently, he leads the Photonic Materials Group at HEU.