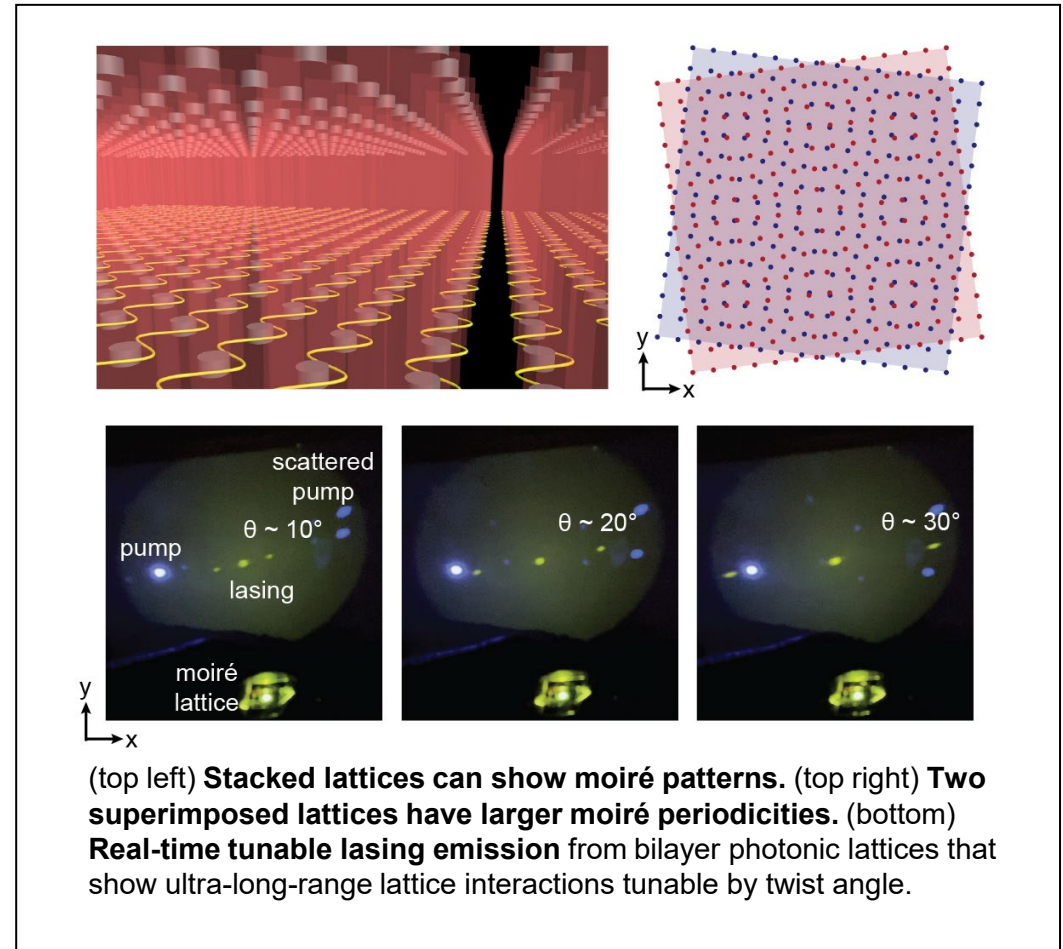


Far-field Coupling between Moiré Photonic Lattices

Teri W. Odom, Northwestern University

Moiré patterns—two or more periodic structures stacked with a twist angle—have emerged as a promising platform to control the flow of light. However, most moiré-induced interactions and phenomena have been limited to the two stacked patterns nearly touching each other.

We demonstrated ultralong-range coupling between stacked photonic lattices separated vertically by more than 1000 times the periodicity or particle-to-particle spacing the lattice. These unexpected long-range interactions are from dark surface lattice resonances, hybrid modes whose standing waves are preserved out of plane, where the resonances of one lattice interfere with the other lattice. By integrating bilayer and trilayer lattices at different twist angles with liquid gain media, we found that these stacked lattices showed moiré features that were tunable by changing the twist angle between lattice patterns. This findings expand approaches to engineer moiré phenomena and nanoscale lasing and open opportunities for remote sensing.



All Scout Nano Day at Northwestern University

Teri W. Odom, Northwestern University

- Our education and outreach integrates current photonics and device research in diverse ways. Annually, the Odom Group hosts Boy Scouts and Girl Scouts from local troops as part of the All-Scout Nano Day at Northwestern University. Along with other Northwestern research groups, the Odom Group offers a full-day interactive nanotechnology demonstration for the troops. Hands-on laboratory exercises allow scouts to fabricate their own micro-gratings to take home by molding a photo-curing polymer against a master pattern. The scouts also learn about the interference patterns produced from light passing through their molded samples. These activities aim to encourage young scholars to consider science and engineering as a career and to highlight the Odom Group's expertise in nanofabrication and nano-optics.
- Odom is also an active advocate for increasing women in STEM by participating in on-campus seminars and lunches and visiting local public schools.



All Scout Nano Day includes presentations by graduate students and professors on “What is Nanotechnology?” and “Being a Scientist”, demonstrations of state-of-the-art equipment, and hands-on activities of nanoscience concepts.