

Optical waveguides for sensing applications

by

Aviad Katiyi

Supervisor: Dr. Alina Karabchevsky

Guided wave optics provides a rich platform for fundamental investigations in a variety of systems. This is because waveguides have unique features, such as compactness and the ability to be configured according to the required applications. Overtone spectroscopy is a powerful tool for investigating molecular structures and dynamics. However, the near-infrared region, which exhibits great potential, is largely overlooked due to the low absorption cross-section of the overtone vibrational transitions.

In the seminar, I will describe the absorption mechanism of molecular vibrational harmonics and overview the recent developments in new, efficient, and affordable detection methods, which can be applied to chemical sensors, healthcare, and even for the monitoring of cancer treatment efficiency.