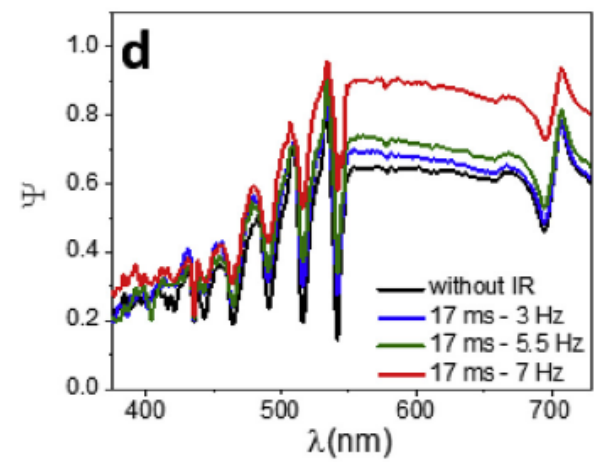
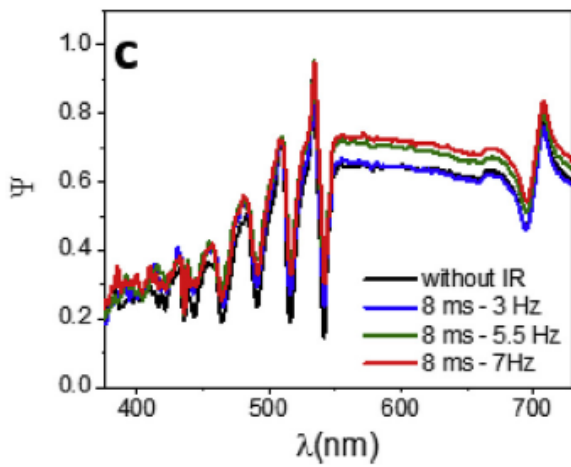
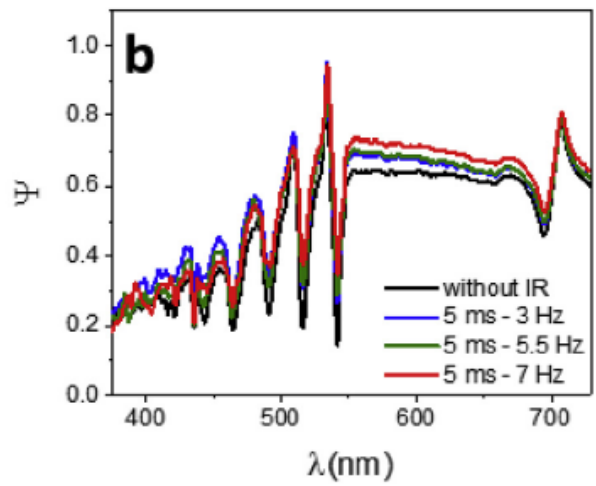
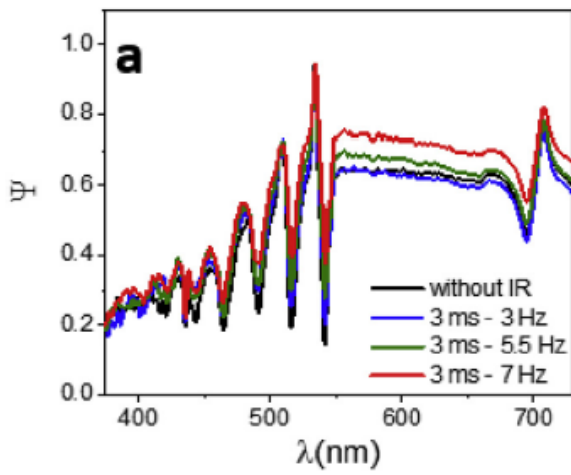


Our new paper in journal of Optical Materials

Congratulations to our new paper " One dimensional photonic crystal as an efficient tool for in-vivo optical sensing of neural activity " by Foozieh Sohrabia, Seyedeh Mehri Hamidia,* , Nasrin Asgaria, Mohammad Ali Ansari, Roya Gachilooa

In this paper, we recorded optically the neural/neuromuscular activity of alive worm via phase-sensitive measurement while stimulating it optically using infrared laser. By supporting Tamm plasmon mode, our fabricated multilayer structure of Glass/(TiO₂/SiO₂)₁₂/Au was used as a sensing platform. By fixing an earth worm to the gold side of the structure and using open optic measurements, the amplitude ratio (Ψ) and phase shift (Δ) of reflections under s- and p-polarized incident lights have been recorded for different frequencies and pulse duration of IR laser. By increasing the pulse duration to 17ms, Δ and Ψ values of Tamm Plasmon Polariton resonance for different frequencies have been splitted considerably in a regular trend. We hope that the combination of plasmonics and Tamm plasmon mode can open new insights into non-invasive neural/neuromuscular stimulation and recording.



Ψ parameter for pulse duration time of (a) 3ms (b) 5ms (c) 8ms (d) 17ms for IR frequencies of 3 Hz, 5.5 Hz and 7 Hz at $\theta=30^\circ$.