



Mohammad Hossein Zarifi

Professor, University of British Columbia



RF/Microwave Sensors and Augmented Reality

Definition:

- AR technology overlays digital information onto the real world, enhancing users' perception of reality.
- AR utilizes real-time data, graphics, and audio to create immersive experiences

Electromagnetic and AR

- RF/microwave sensor data with AR allows for real-time mapping and object recognition in various environments

Potential Applications

- Automotive Safety
- Military Training
- Soft Robotic
- Gaming
- NDT Inspection and monitoring

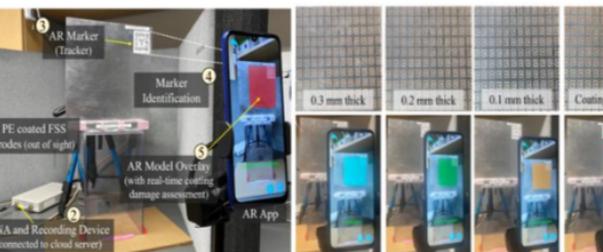


Figure 5

Prof. Mohammad Zarifi

mohammad.zarifi@ubc.ca

University of British Columbia

5/37

Enter your question

Submit

PDH Form

Webinar_Slides





How about Gases, Light and ...

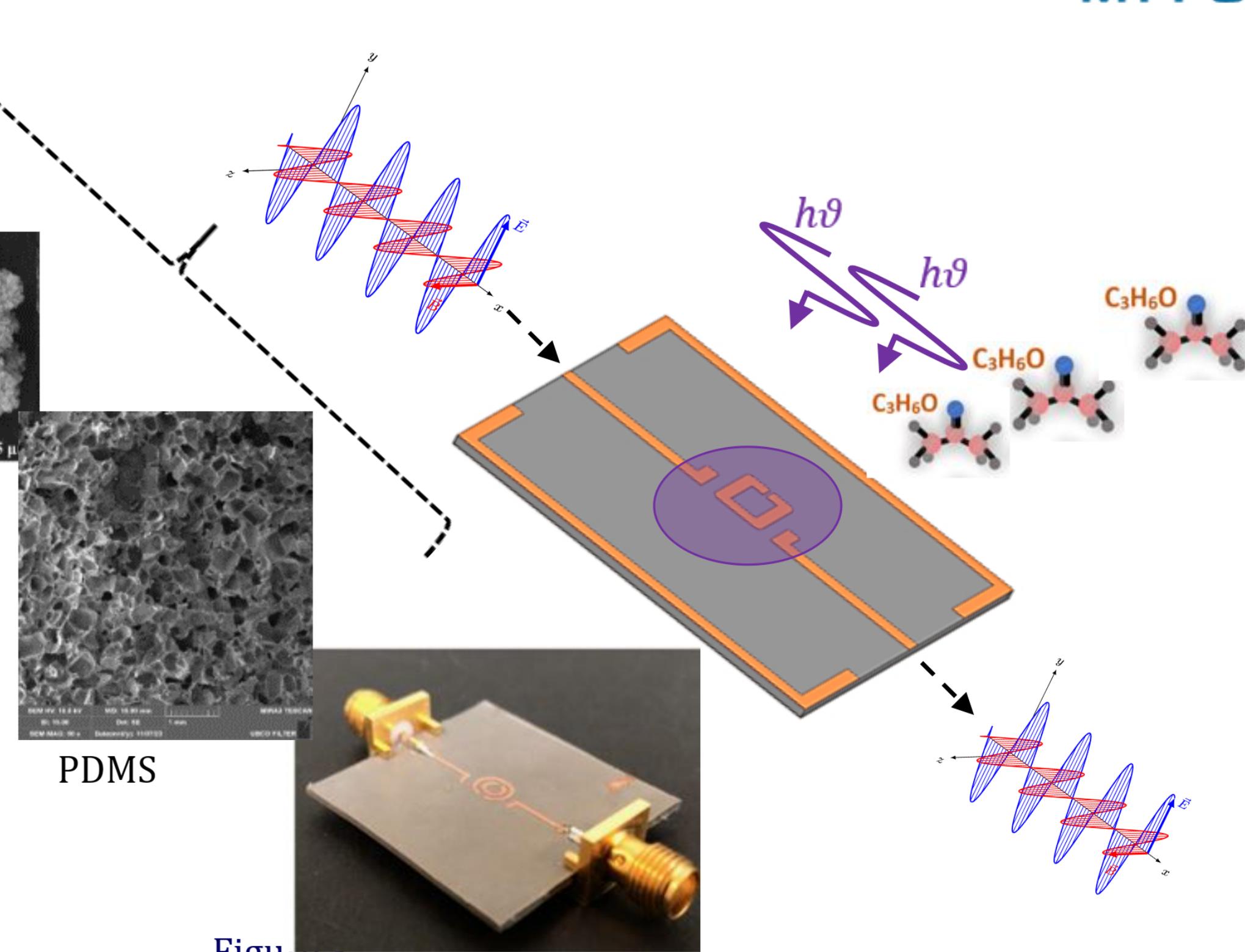
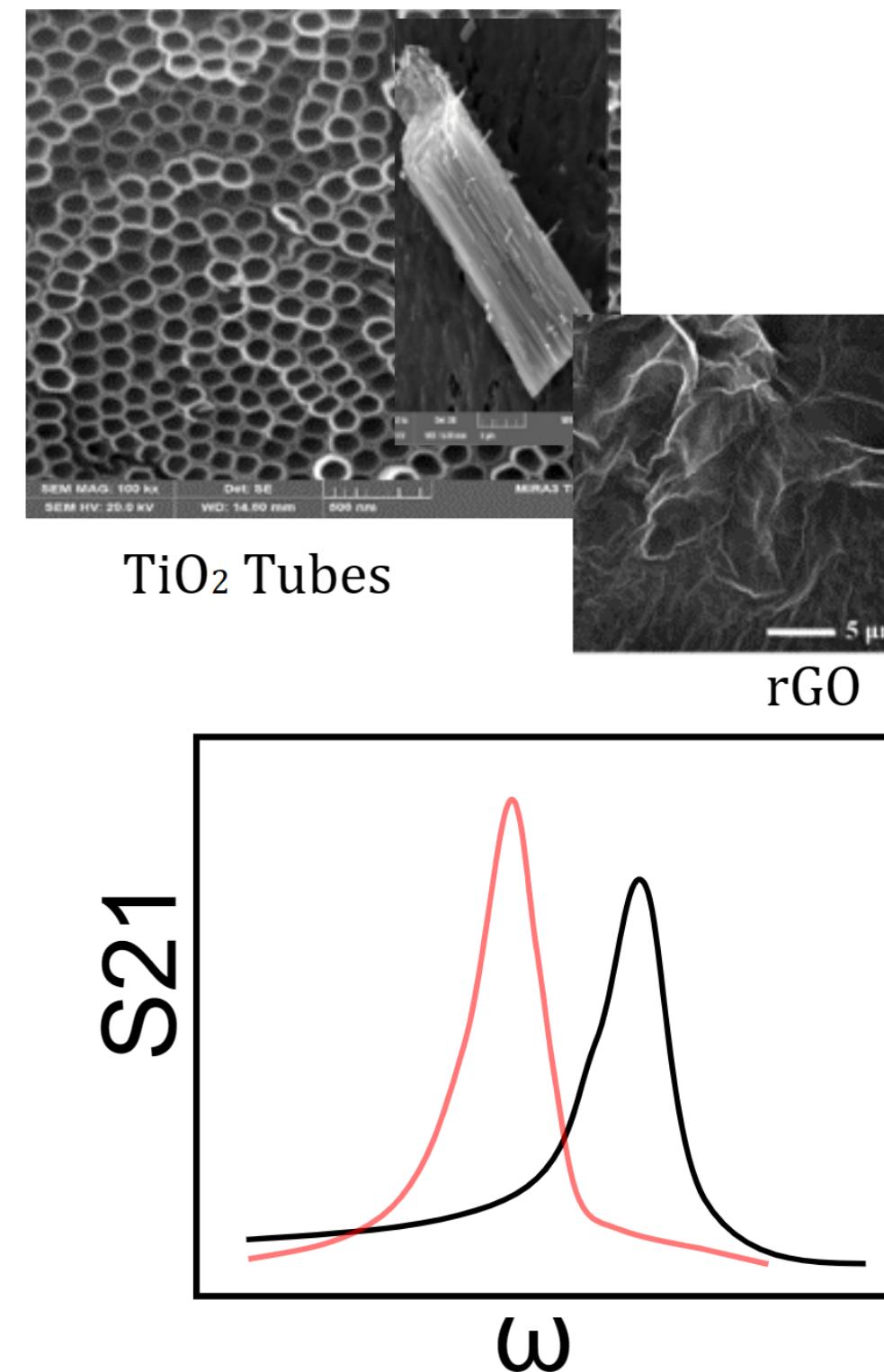
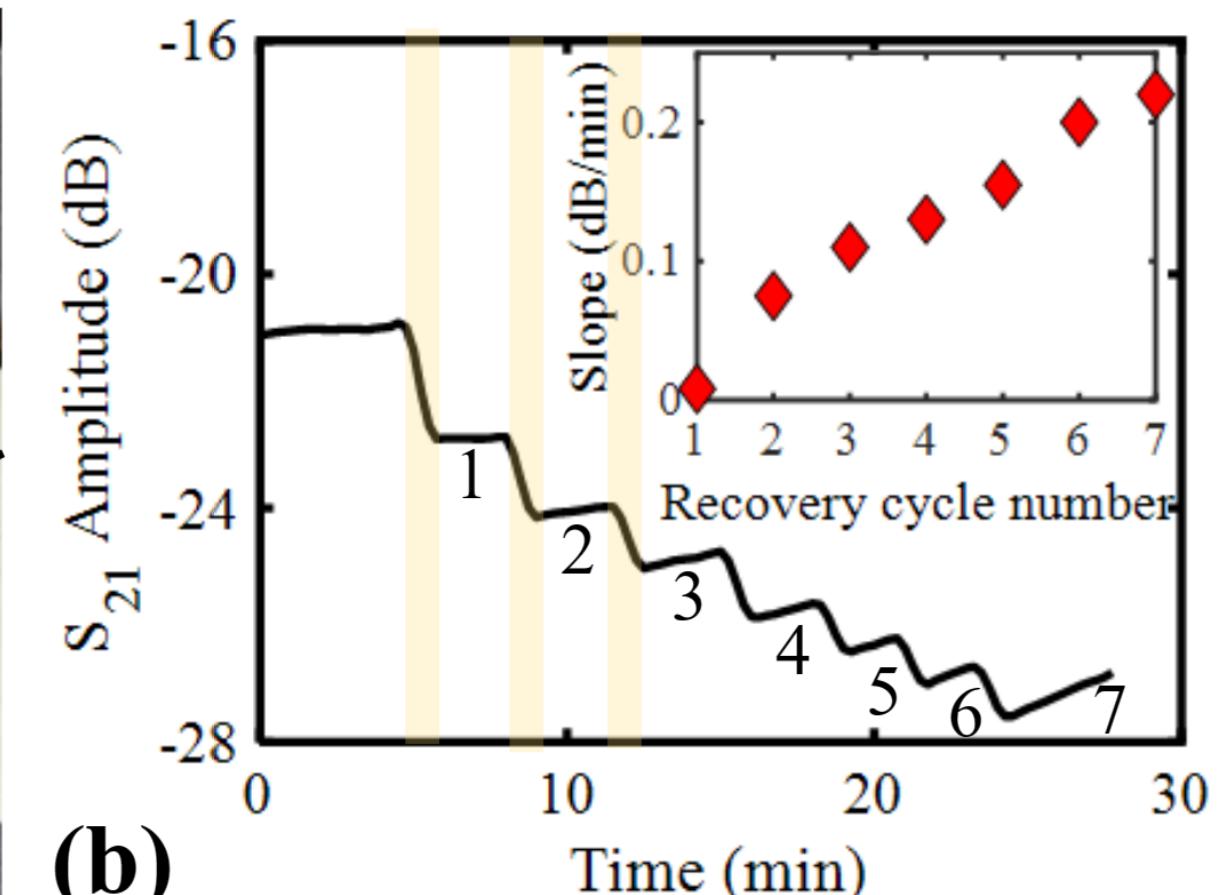
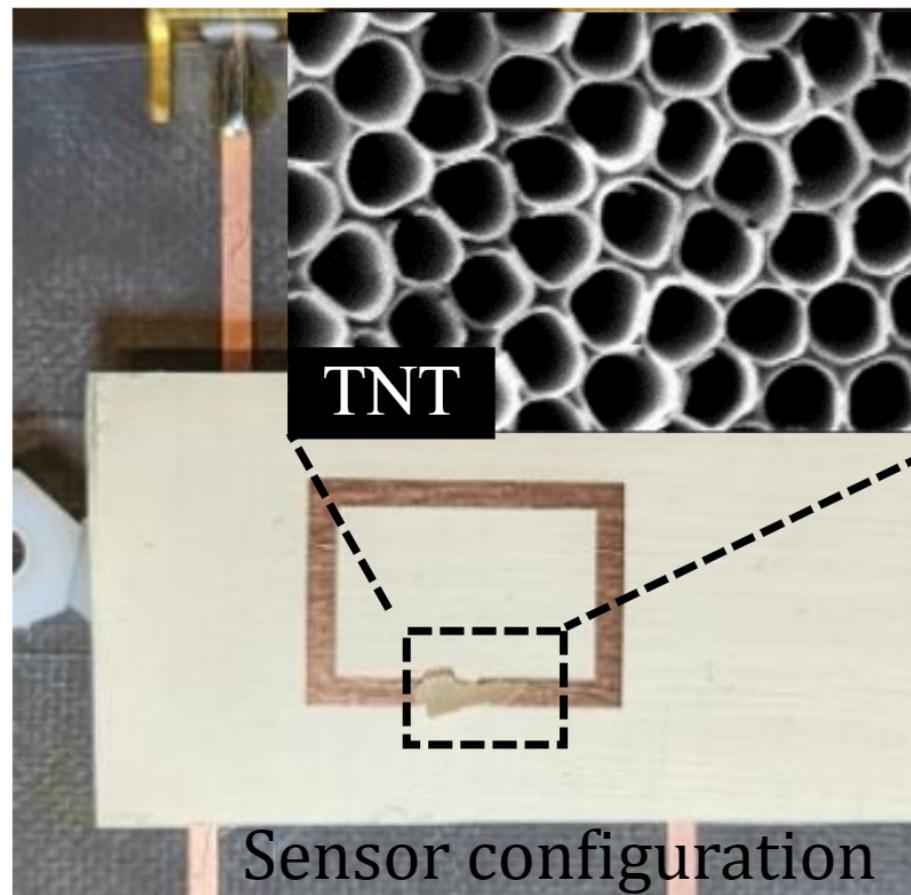
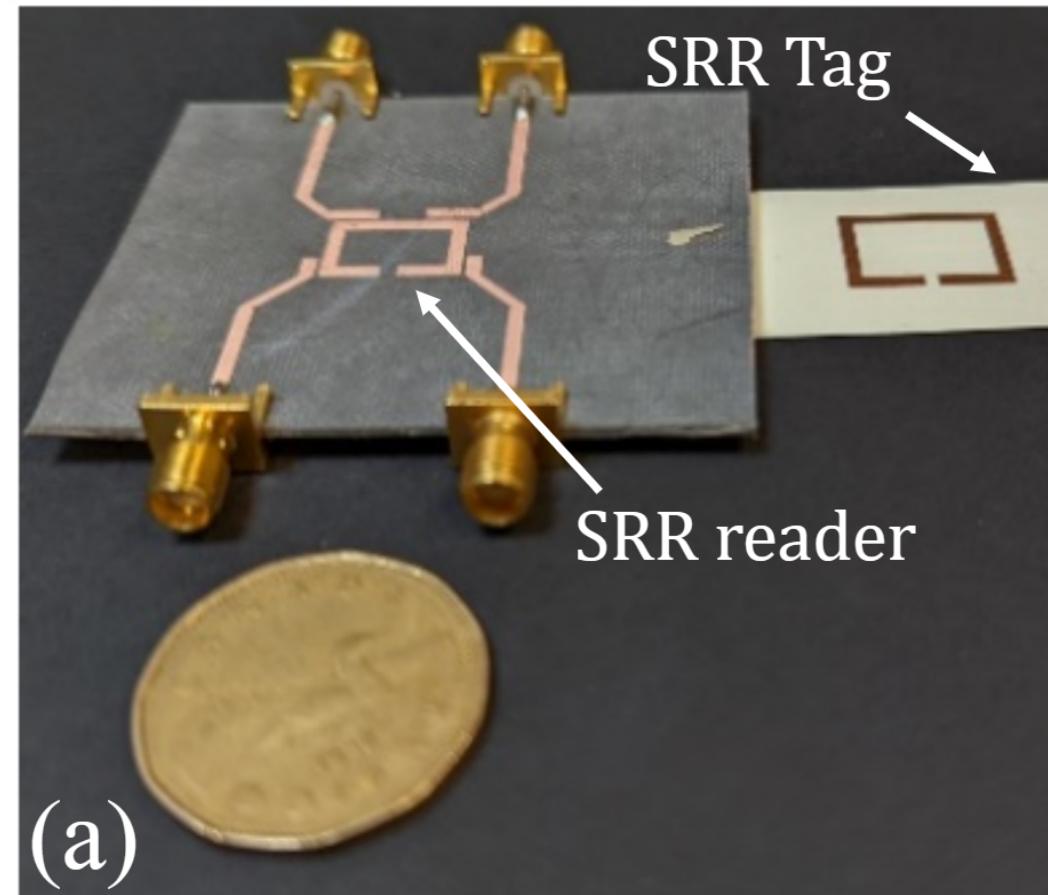


Figure 3

UV Detection Using TiO₂ Passive RFID Tags



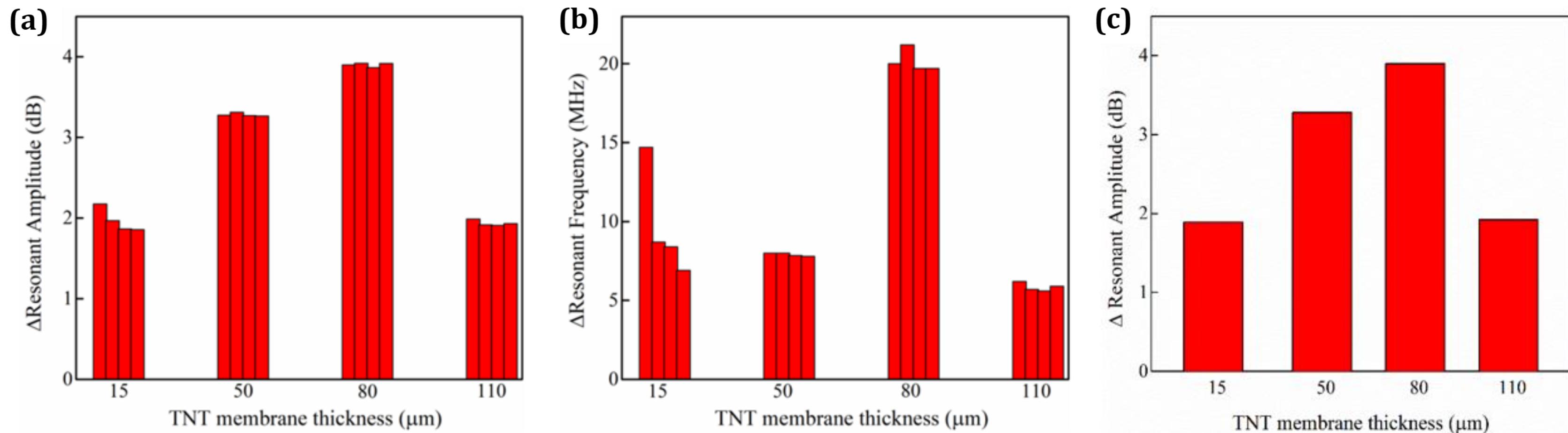
(a) Fabricated SRR reader and passive tag and the sensor configuration with 80 μm TNT (SEM image in the inset) placed on the tag.(b) Accelerated active sensing mode – faster light detection.

Figure 17

Jain et al. "High Resolution Ultra-Violet Radiation Detection Using TNT-integrated Wireless Passive Microwave Resonator" DOI: 10.1109/IMS37962.2022.9865511



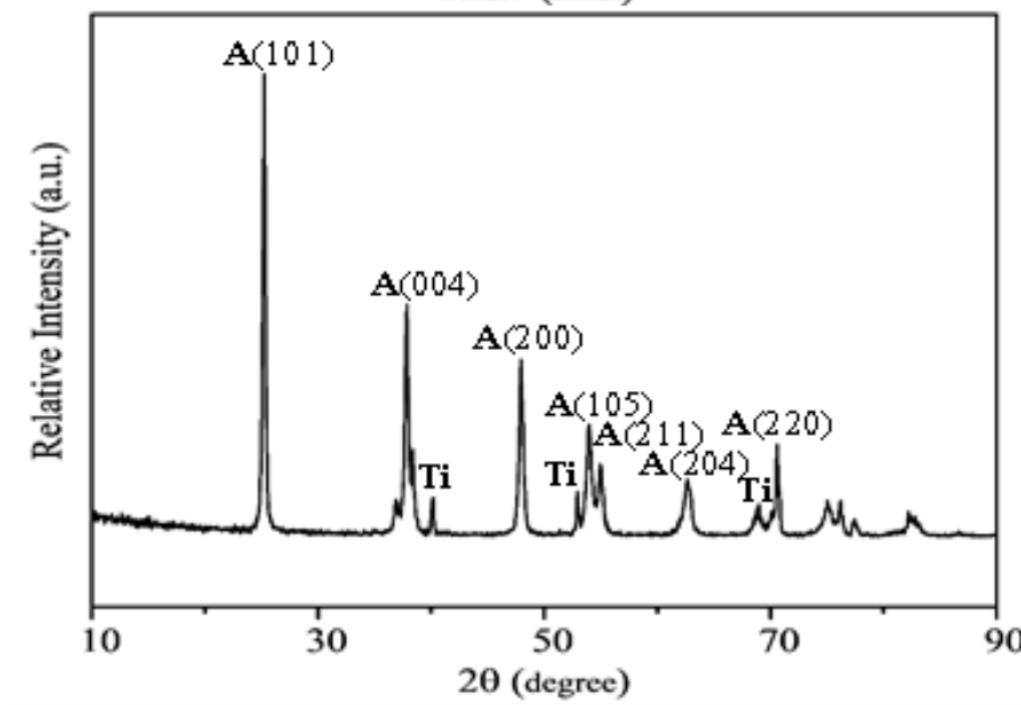
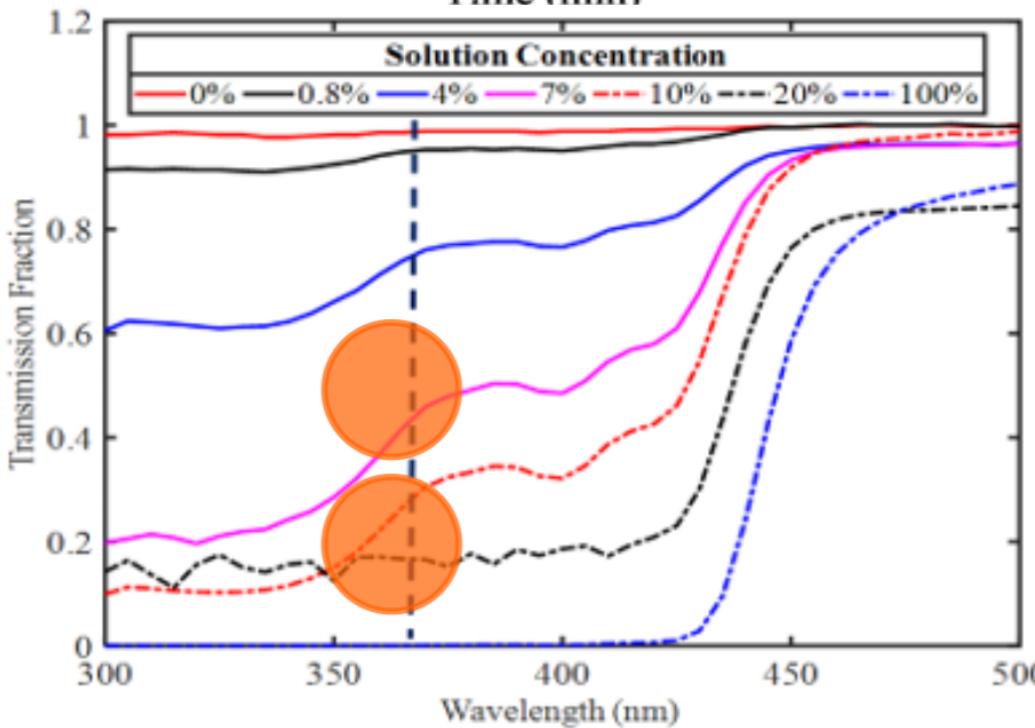
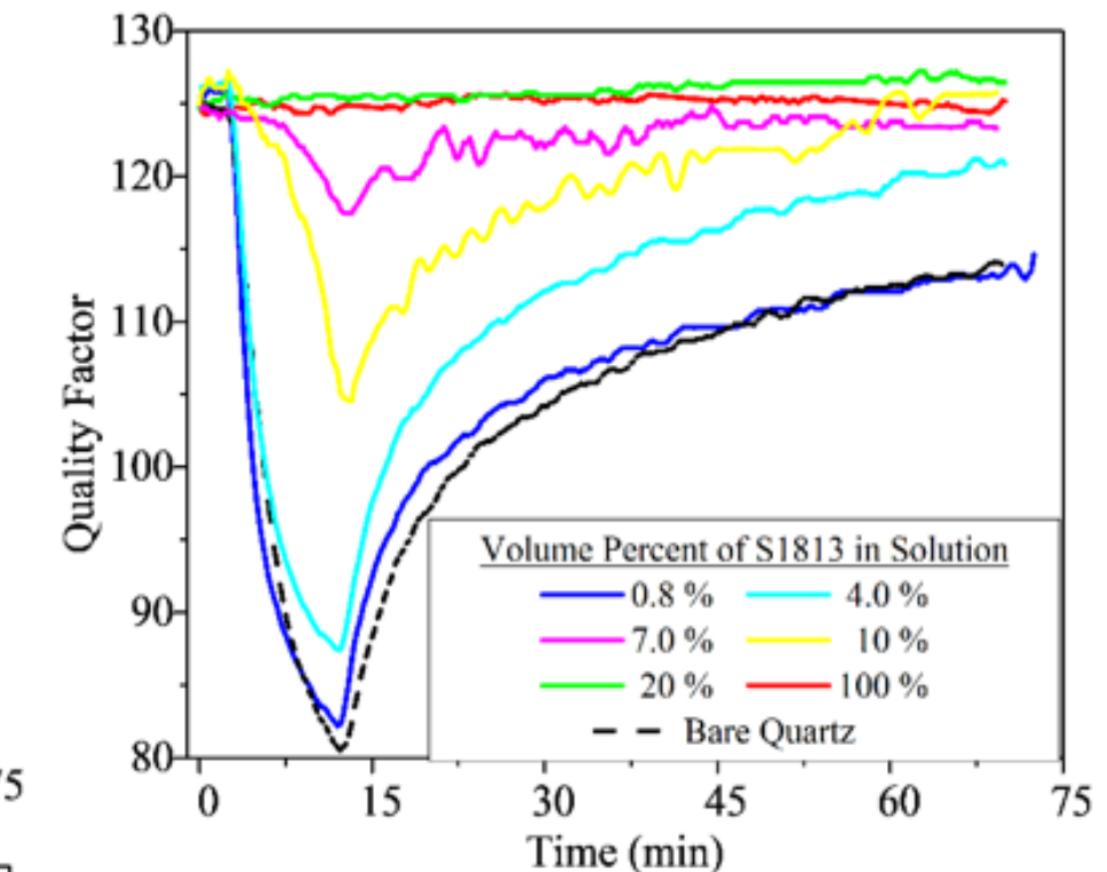
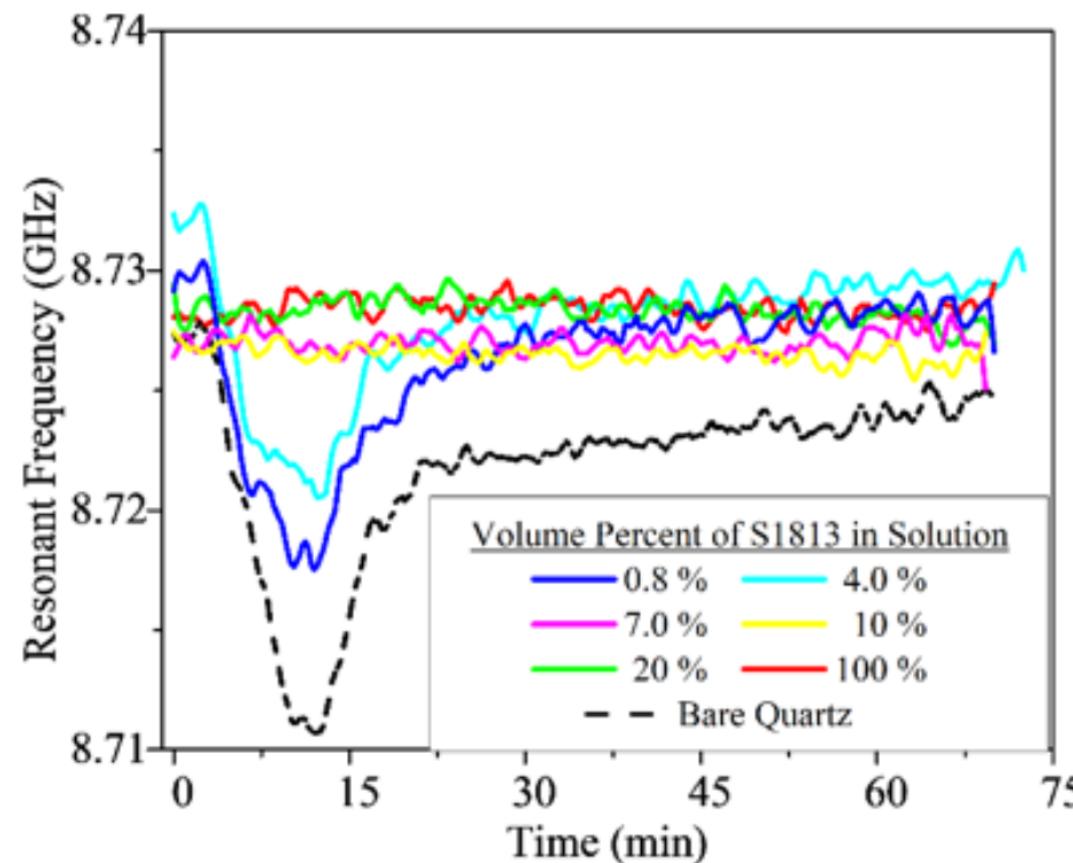
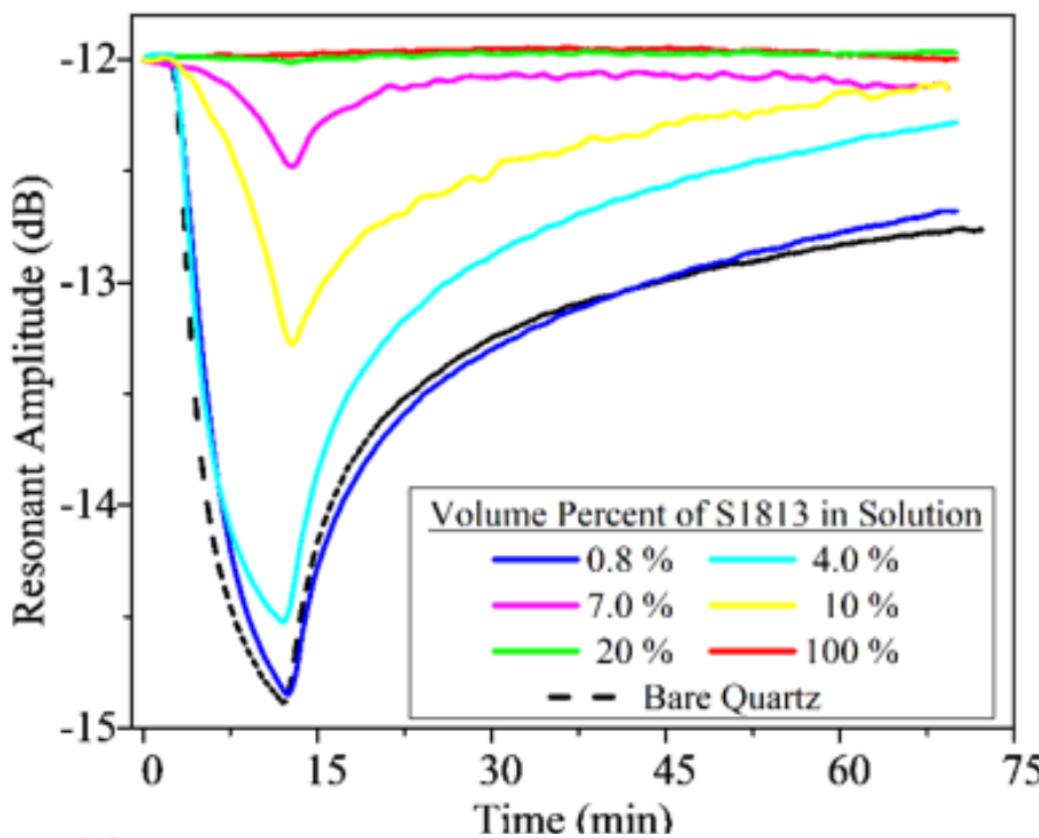
Investigating length of TiO₂ nano-Tubes in UV Sensing



Alijani et al. "Investigating the thickness-effect of free-standing high aspect-ratio TiO₂ nanotube layers on microwave-photoresponse using planar microwave resonators" DOI: 10.1016/j.apmt.2023.101832



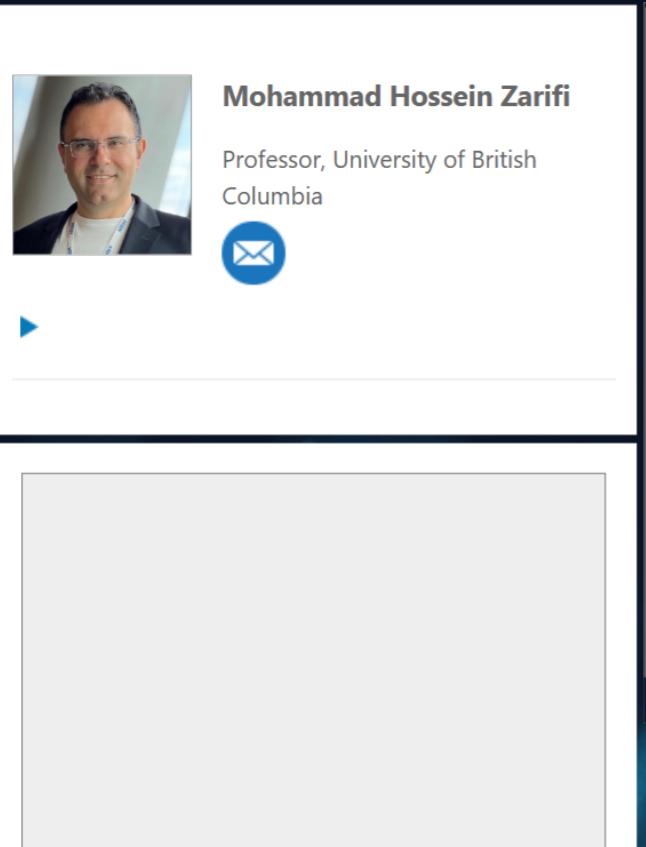
TiO₂ nanotube-integrated microwave for liquid Sensing



Wiltshire et al. "TiO₂ nanotube-integrated microwave planar resonator sensor for ultraviolet transmission-based liquid characterization" DOI: 10.1016/j.snb.2021.130014

IEEE MTT-S WEBINARS

Your Educational & Professional Resource



Enter your question Submit

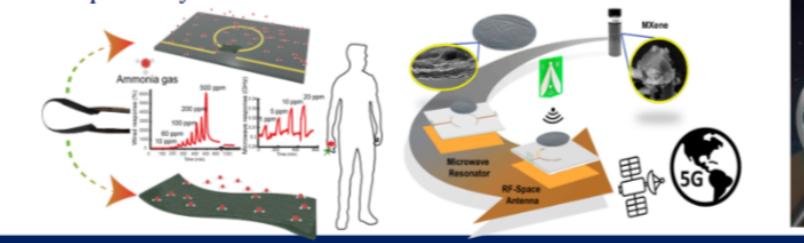


Mohammad Hossein Zarifi

Professor, University of British Columbia



- Successful integration of TiO₂ nano-tubes in microwave resonators have been demonstrated
- Performance of microwave sensors to ultra violet light sensing
- Performance of microwave sensors in UV-activated gas sensing
- Visible light detection at microwave frequencies
- Extended range of microwave sensors in liquid and solid sensing
- Compatibility of the new devices with RFID and IoT methods



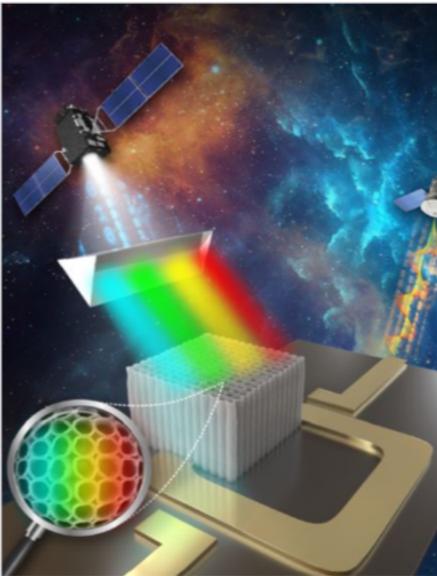
Prof. Mohammad Zarifi

mohammad.zarifi@ubc.ca

University of British Columbia



MTT-S



36/37



PDH Form

Webinar_Slides