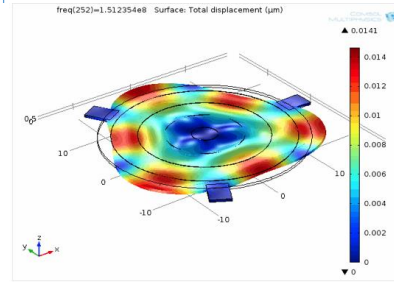
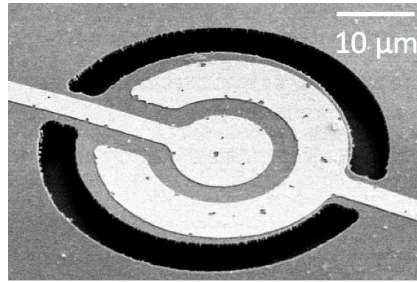


Lithium Niobate Based Photonic Integrated Circuits for Reconfigurable Sensing and Signal Processing

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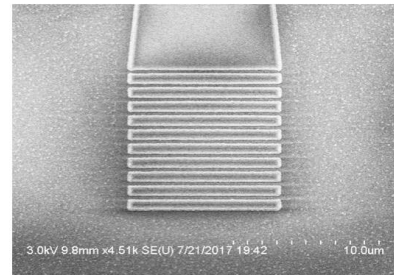
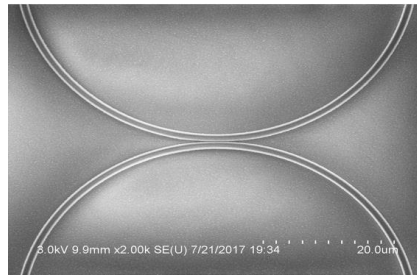


Research Objectives

- Develop photonic integrated circuits (PIC) for widely tunable and highly sensitive microwave and millimeter-wave radiometry
- Innovations in material synthesis, device design, and platform integration
- Improve SOA in bandwidth, tuning range, and NEP
- TRL 2 at the start and TRL 4 at the conclusion

Approach

- Resort to the recent advances in integrated photonic devices to process microwave signals
- Use ion-sliced lithium niobate (LiNbO₃ or LN) thin films of single crystal quality for their strong electro-optic, piezoelectric properties, and strong acousto-optic interactions



Enabling Subsystems in the LN PIC platform exploiting interactions among microwave, photons, and phonons

Potential Impact

- Passive microwave radiometry over a wide frequency range with fine spectral selectivity
- Applications in Earth and Planetary Science and limb sounders and auroral imagers
- Subsystems applicable for optical frequency data acquisition in NASA science missions