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Modeling dome microcavities in COMSOL

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Dome microcavities are on-chip optomechanical devices formed by two quarter-wave Bragg stacks of silicon on silica. One of these mirrors is buckled away from the chip and is allowed to vibrate. These vibrations are thermally driven and can be detected using shifts in the optical resonances of the cavity. We use COMSOL Multiphysics software model to the coupling between the optical and mechanical modes of the device and compare these simulations to experimental values to confirm the accuracy of the model. Utilizing the model as a base-case, the optomechanical properties of future devices can be predicted and optimized.

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