Fabrication of a Discriminating Gas Sensor

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Abstract:

Gas sensors have been used for many years for equipment control and environmental monitoring. A basic problem is that they typically are unable to discriminate between gasses that are chemically similar. This generic problem is the source of considerable research, typically involving the creation of arrays of sensors that are slightly different and then developing an empirical signature for different gasses.

In this project we designed and fabricated a new type of gas sensor. The gas must diffuse down a nano sized cavity to reach the sensing elements. By spacing the elements along the cavity one can determine the diffusion coefficient and from that infer the size of the diffusing species.

We laid out the test chip and developed several critical processing steps needed to build the device. Next the necessary materials were deposited and patterned. Finally, we intend to package the device and test its response.