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ABSTRACT

A novel process for fabricating an integrated circuit sensor/actuator is described. Silicon islands are created by forming deep trenches in a substrate and lining the trenches with oxide. This forms silicon islands substantially surrounded by electrically isolating oxide. The anchor portion of the sensor/actuator beams is connected to the islands and is released from the substrate and therefore is also electrically isolated from the substrate. The IC sensor/actuator is manufactured according to the following process:

1. forming deep trenches in a substrate, these trenches preferably surrounding substrate material on three sides and bottom, thus creating "islands" of substrate material surrounded by trenches and leaving one side of the island uncovered by the trench;
2. lining the trenches with electrically insulating material, such as an oxide, thus surrounding the substrate material island with an electrical insulator;
3. forming sensor/actuator beams in the substrate material such that the beams contact the uncovered portion of the islands.
4. using release etching, isolating the sensor/actuator beams from the substrate.

The island/beam structure may be connected to a CMOS or other IC structure using conventional metalization processes.

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