

# **Fabrication and characterization of the innovative microcoil sensors**

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## **Abstract**

Coils have been used in sensing application for a long time for they can coil or uncoil noticeably according to the change in the environment. The coil movement can be readily observed by human eyes and it advances as a cost-effective and power-free device. However, due to its relative large size, the dynamic response time of this coil device cannot compete with many other micro or nanosensors. A coil device at micro or nano scale size, however, would provide an outstanding sensor platform with an improved dynamic response, greatly reduced size, and integration of micromechanical components with on-chip electronic circuitry. In this work, we report a SiO<sub>2</sub>/Si/SU-8 trilayered microcoil for sensing application. The dimensions of the microcoil were 7.7 mm in length, 50 μm in width, and 28 μm in thickness when extended. Noticeable change in resistance is reserved when the microcoil is exposed to an acidic environment after being modified with aminopropyltriethoxysilane.