

# The Charge Tracker

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*Abstract*— The buildup of electric charges on the surface of materials is frequently large enough to cause electrostatic discharge (ESD). This is a serious problem in the semiconductor and the electronic industry because ESD causes product damage ranging from immediate failure to performance degradation and shortened lifetimes. In 2010 the electronic manufacturing industry spent approximately \$950 MM in ESD prevention products. Currently electric field sensors are not capable of monitoring people and work areas for the buildup of the charge that leads to ESD. Therefore, industry focuses on ESD prevention without monitoring charge buildup. With funding from NSF, we developed the Charge Tracker TM, the first sensor capable of measuring static electric fields vectors with high accuracy and sensitivity. We designed and fabricated two versions of the sensor, the Charge Tracker and the Charge Tracker Pro, one version is simpler the other is more accurate. The Charge Tracker is being used in science and engineering applications. It has been demonstrated to potential industrial partners with positive results. Based on the feedback from these potential customers, we refined the Charge Tracker to determine its viability as a commercial product. In this presentation we will demonstrate the Charge Tracker and discuss results of scientific and industrial measurements with it.