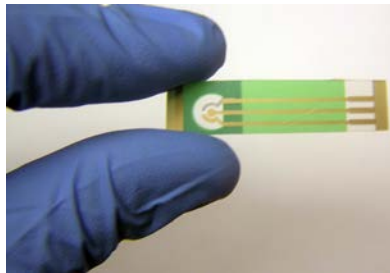


# Electronics Design Center

The Electronics Design Center is one of Case Western Reserve University's many professional service centers which offers its facilities & expertise to internal and external customers.



The Electronics Design Center (EDC) is a world-renowned research center specializing in the development of microsensors and microsystems. The Electronics Design Center dedicates itself to the facilitation of technology transfer between a university and an industrial environment. The EDC is not only a research and educational center but also a fully equipped microfabrication laboratory. We specialize in small, prototyping runs of devices or can provide a service on a device that you already possess. One of our unique strengths is applying microfabrication processes to non-silicon, non-traditional materials.

## SERVICES AND EXPERTISE:

### Thin Film Clean room contains:

- Sputtering System (DC), Denton Vacuum Discovery 18
- Sputtering System (RF), Denton Vacuum Explorer 14
- Targets: Ag, Al<sub>2</sub>O<sub>3</sub>, Al, Au, C, Cr, Cu, Ir, Ni, Pb, Pd, Pt, SiO<sub>2</sub>, Ta, Ti, W, and many more

### Thick Film Clean room contains:

- Thick Film Printer, MPM TF-100
- Inkjet Printer, Asymtek Century C-730
- Spin Coater, SCS
- Laser profileometer, Cobra
- Picospritzer, Parker Automation
- Microscope for inspection, rheometer, oven and furnace
- GIX Microplotter

### Processing Clean Room contains:

- Programmable Spin Coater, Laurell
- Hot Plate, Wenesco
- Photomask Aligner, ABM
- Annealing Furnace, Thermco Mini-Brute

### Additional Equipment:

- Annealing Furnace, Thermco Mini-Brute
- Wire Bonder, Kulicke and Soffa Model 4123
- Dicing Saw, DISCO DAD3350
- Cutting & Marking Laser, Versa 2.30
- Resistance Measurement, Lucas Labs 4 Point Probe
- Spot Welder, Unitek
- Vacuum Ovens, furnaces

- The EDC provides services such as custom sputtering, microfabrication, thick film printing, and wafer dicing.
- The EDC trains users on its equipment and allows access to its laboratories for processing.
- The EDC provides access to its laboratories and equipment for courses, both credit granting courses and short courses

- EDC website: [engineering.case.edu/edct](http://engineering.case.edu/edct)



CASE WESTERN RESERVE  
UNIVERSITY EST. 1826

# Electronics Design Center (EDC)

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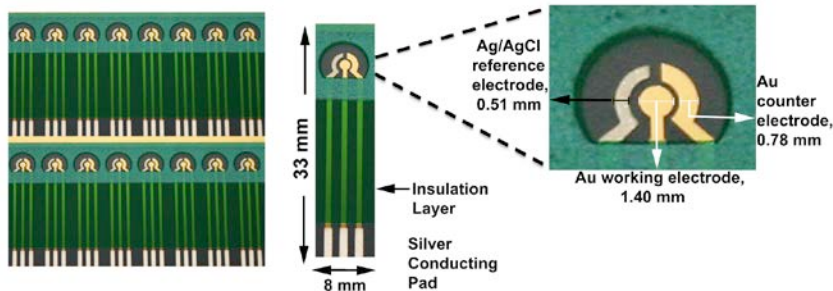
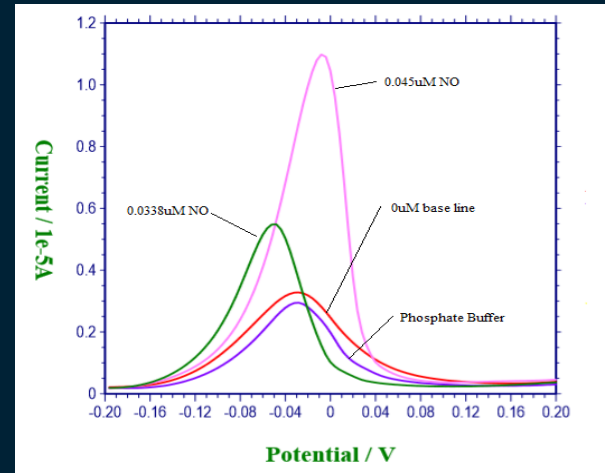
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The Electronics Design Center is one of the many core facilities and service centers at Case Western Reserve University. More services and expertise can be found at: [research.case.edu/corefacilities](http://research.case.edu/corefacilities)

**A Single-use, Disposable, *In Vitro* Platinum-Based Biosensor for the Detection of Extremely Low levels of Nitric Oxide in Aqueous Medium** - Nitric Oxide (NO) plays an important role in the human body as a gaseous cellular signaling molecule involved in many physiological processes. With an extremely short half-life of a few seconds in aqueous medium, NO radicals are extremely difficult to detect *in vitro*. A method of detection of NO includes electroanalysis; a sensor and NO reacts, inducing a current or voltage change. An electrochemical thin-film platinum based biosensor incorporated with a NO selective porphyrin and ionic conductive electrolyte membrane was developed at the Electronics Design Center. It was possible to classify concentration of nitric oxide by the amplitude of the amperage peak. These results demonstrate that the detection of extremely low levels of NO by a cost-effective and user-friendly biosensor is possible.



## Single Use, Cost-effective Thin Gold-film Biosensor for The Detections of OVX1 and CA125 Biomarkers for Early Stage Diagnosis of Ovarian Cancer –

Ovarian cancer is the leading cause of death in the female reproductive system. Treatment of ovarian cancer is most effective at its early stages. At present, the available early detection methods for ovarian cancer are both expensive and unreliable. A single-use gold-based thin-film biosensor was developed at the EDC to electrochemically detect the concentrations of ovarian biomarkers OVX1 and CA125 in human serum.