

## Applications:

Suggested applications for this technology include

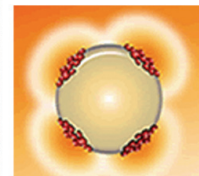
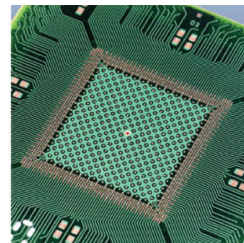
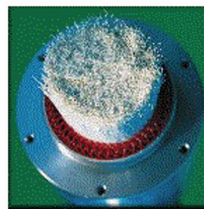
- Synthetic muscles
- Smart clothing
- Corrosion-resistant coatings
- Production of plastic wires
- Production of fibers that allow for dissipation of static electricity
- Production of hollow fibers for membrane separation
- Valve control devices for micro-fluidics
- Actuators

## Benefits:

- Tunability of N<sub>2</sub>/O<sub>2</sub> separation using hollow fibers
- Accurate real-time detection of ammonia and organic vapors for increased safety
- Ability to have micro- and nano-devices and robotics perform non-invasive surgery
- Potential to use soluble polymers as conductive inks for "printed circuit" applications, chips, RFID tags, etc.

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*Commercial applications: (l-r) photovoltaic solar cell, hollow fibers for gas separation, e-beam lithography, and chemical and biological sensors.*

## Summary:

Conducting polymers—plastics that conduct electricity—continue to find market niches in consumer electronics and antistatic textiles, some of which have military applications. Among the most exciting applications is the use of conducting polymers in light-emitting devices (LEDs), replacing silicon as the traditional substrate material for clock radios, audio equipment, televisions, cellular telephones, automotive dashboard displays, and aircraft cockpit displays. Conducting polymers provide benefits to industries such as electronics by shielding against electromagnetic interference (EMI). Conductive polymers are also already used in devices that detect environmentally hazardous chemicals, factory emissions, and flavors or aromas in food products. Currently, their conductivity is being explored in electrostatic materials, conducting adhesives, electromagnetic shielding, artificial nerves, aircraft structures, diodes, and transistors.

## Development Stage:

Work is continuing with most applications. Specific new work has been completed regarding actuators and hollow fibers. While more application-specific work needs to be done for a complete product, each of these technologies would provide a substantial base from which to form either a go-to-market product or complete product line.

## Patent Status:

Currently we have a portfolio of patents in the conductive polymer area. For the list of patents see [www.lanl.gov/partnerships/license/techs/polymer\\_portfolio/](http://www.lanl.gov/partnerships/license/techs/polymer_portfolio/)

## Licensing Status:

All listed technologies are available for license.