

# Startup Seeks Organic RFID Chip

Research firm ORFID is developing technology to make cheaper, thinner, more flexible chips out of plastics, instead of silicon.

By Jennifer Maselli

March 29, 2004—Precision Dynamics, a San Fernando, Calif., manufacturer of healthcare and identification management products such as RFID wristband systems, and Convergent Ventures, a venture capital firm in Los Angeles, have formed a new company, ORFID, to develop polymer-based RFID chips. ORFID's polymer-based chips will not only be cheaper than traditional RFID chips available on the market today, ORFID executives say, but also offer greater physical flexibility, printability and ease of design modification. Unlike a traditional silicon RFID chip, a polymer-based chip is made of plastic created from organic polymers, which contain backbones of carbon atoms linked together. A traditional semiconductor doesn't contain carbon atoms and hence is inorganic.

A polymer-based RFID chip functions just as a silicon RFID chip does. But a polymer-based chip is cheaper to produce because it doesn't need to be made in a semiconductor fabrication facility. In addition, a polymer-based chip, being made of plastic, is more flexible and thinner than a silicon chip, which is rigid. Scientists have known since 1977 that some polymers could act as semiconductors. So far, however, companies have not been able to produce plastic chips that come close to matching the performance of silicon. ORFID isn't saying when it will release a product, but the company is optimistic about the prospects of its technology.

“The ORFID team believes that our technology will be of value in developing basic organic polymeric semiconductor technology, as well as building advanced applications related to hospital-patient monitoring and tracking, supply chain management and large flat-panel displays,” says Jonathan Lasch, chairman and CEO for ORFID. ORFID's first offerings will be based on technology developed both at Precision Dynamics and at the University of California, Los Angeles (UCLA) by Dr. Yang Yang, the founder of ORFID and a professor at UCLA's School of Engineering and Applied Science. ORFID has received multiple technology patents. Its intellectual property portfolio consists of a number of issued patents and patent applications that cover areas including organic semiconductor components, ink-jet printing, conductive polymers, RFID on flexible substrates, reactive coupling device components and other related items, according to the company.

The company says it will deliver both active and passive chips to multiple industry segments. Within the healthcare industry, applications will include patient monitoring, asset tracking, inventory control of pharmaceuticals and medical equipment, and other forms of information management. Other targeted industry segments will include semiconductor, paper, chemicals and computer industries.

ORFID believes that its technology is applicable either standalone or as a hybrid with silicon technology across many different industries. Partnering opportunities, as well as market size, will vary from industry to industry, the company says, but polymeric RFID chips will be of value where flexibility, printability, and economy are important characteristics. That cuts across many industries, ORFID says.

The chips' cost will depend on the design and application, but for some commodity applications that are cost-sensitive, pricing should reach the range of typical high-speed printing costs, says Lasch. Applications that involve hybrid technologies or development of complete tag-reader systems would be considerably more expensive. ORFID says it will license its technology to Precision Dynamics and other companies and expects to see its organic polymeric semiconductor technology incorporated into flat panel displays, trackable paper and supply chain management applications.

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