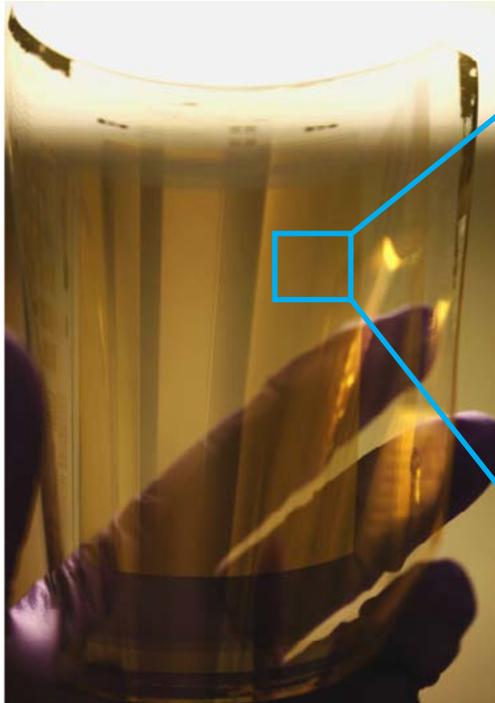
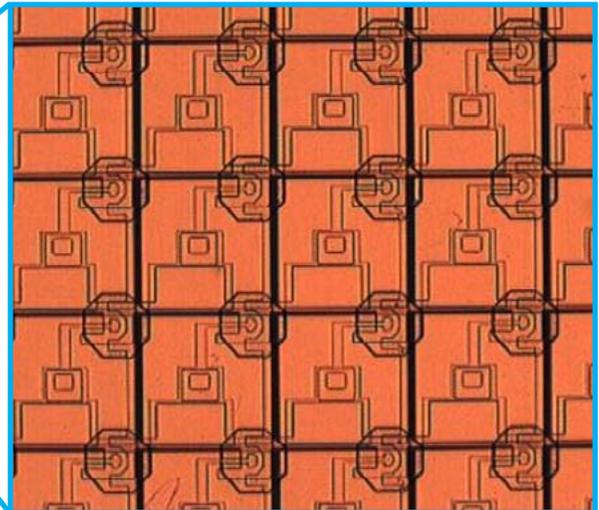


## **BASF: Enabling value-added offerings for new market**

Application development and full system prototyping in printed and flexible electronics



Printed flexible display backplane



Printed backplane TFTs

### **OVERVIEW:**

World-leading chemical company BASF creates the chemistry for materials and other component products that enable multiple industry applications. With the goal of expanding beyond their existing business into new areas, they developed a portfolio of organic chemistry-based materials targeted at display manufacturers. While BASF has significant chemistry expertise, they did not have the in-house capability to *integrate* transistors for backplanes and displays using their materials. The ability to demonstrate such an application would help BASF capture value-added opportunities with prospective customers in the display market.

### **PARC solution**

PARC already had experience with commercial display manufacturers and applications. More importantly, PARC had a full spectrum of deep expertise in organic and printed electronics—ranging from jet-printing techniques and lithographic processes, to flexible substrates and the ability to integrate displays and backplanes. PARC could therefore not only test BASF's materials, but also provide the necessary know-how to apply these materials to a display prototype for BASF.



## Process

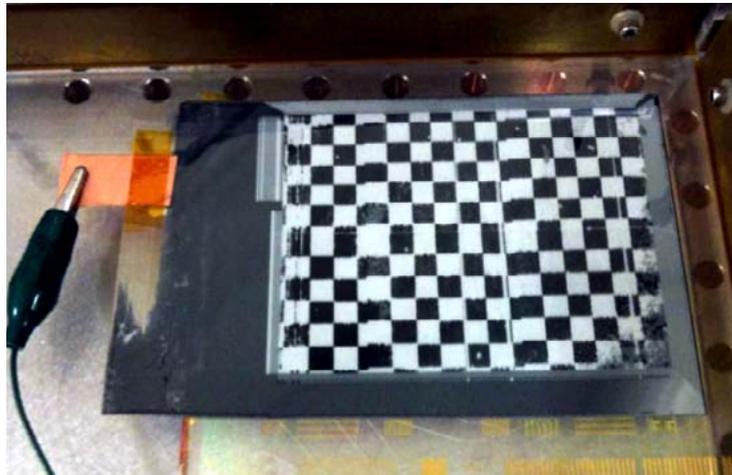
The engagement was framed in two phases: feasibility and prototyping. BASF provided a set of materials PARC researchers could work on within their own comprehensive facility, which includes infrastructure for materials characterization and processing, device fabrication, and system design. PARC conducted experiments on multiple materials in BASF's portfolio before both parties agreed on the use of a promising n-channel material to produce transistors for integration onto display backplanes. As challenges arose, PARC researchers were able to quickly resolve them – this included, for example, designing a custom process to address specific needs during prototyping.

## Results

PARC was able to achieve the first inkjet-printed, flexible, n-type display backplane using BASF's material. As a result, PARC delivered:

- Insight into methods by which BASF's display clients could produce such backplanes with BASF materials
- Demonstrators that BASF could use both internally and with potential clients
- An integrated electronic system (i.e., hardware and software) to drive the displays

Most importantly: PARC delivered to BASF an *understanding* of what it took to move from materials to integrated devices, even though BASF had long-standing expertise on the chemical side. This insight and understanding would help BASF in their efforts to design and optimize further material solutions for the industry, and better support their target clients at the materials- and integrated-device/ application levels.



Completed display system prototype

## More information

Business Development  
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A global center for commercial innovation, PARC, a Xerox company, works closely with enterprises, entrepreneurs, government program partners and other clients to discover, develop, and deliver new business opportunities. PARC was incorporated in 2002 as a wholly owned subsidiary of Xerox Corporation (NYSE: XRX).