

Large-area organic sensors for cyber–physical systems

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I present the new applications of imperceptible sensors for sophisticated real-time health monitoring of civil infrastructures. These sensors consisting of organic transistor active matrix and electrical functional materials have been manufactured using printing technologies. Large-area active matrix sensors were manufactured using screen printing and inkjet printing. Stand-alone printed thin-film transistors exhibited mobility greater than $0.2 \text{ cm}^2/\text{Vs}$ and on/off ratio exceeding 10^6 .

These large-area sensors serve as an important part of seamless cyberspace/real-world interfaces that are commonly referred to as cyber–physical systems (CPSs).

By taking advantage of an active matrix circuit, we developed multi-channel active matrix environment monitoring systems, including pressure and strain sensors. Furthermore, the technical issues and future prospects of health monitoring of civil infrastructures will be discussed.