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Materials and Processes for Flexible Electronics

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High speed, high performance computation will continue to be dominated by silicon-based microelectronics for the foreseeable future. However, there are many applications that would benefit from the development of large area, distributed electronic systems, especially if the systems were rugged, flexible, and inexpensive per square foot, even if individual device performance was relatively low. Our group recently demonstrated organic semiconductor based, photolithographically defined rectifiers operating at 14 MHz, depletion load inverters with a gain of >20, and hybrid flexible CMOS. I will present results on substrates, materials and devices that are compatible with low temperature, flexible substrates, with specific applications for electronic textiles, flexible displays and CMOS. This work is supported in part by the Army Research Labs, DOE, Texas Instruments and Military Tech, LLC.