

# Carbon nanotube thin-film devices for transparent and flexible electronics

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Flexible and stretchable electronics are attracting much attention because of the variety of potential applications from flexible e-papers though wearable healthcare devices. Among various kinds of electronic materials, carbon nanotube thin films have advantages in flexibility, stretchability, and performance because of the excellent electronic and mechanical properties. Low cost manufacturing of flexible devices is also possible with good processability of carbon nanotube films. Their optical transparency is also attractive for transparent electronics applications.

In this symposium, I will talk about recent topics and progresses on flexible electronics based on carbon nanotube thin films, including capacitive touch sensors [1], high-mobility carbon nanotube thin-film transistors (TFTs) and integrated circuits (ICs) on a plastic film (Fig. 1) [2], all-carbon ICs exhibiting excellent stretchability and formability (Fig. 2) [3], and high-mobility TFTs fabricated with high-speed flexographic printing technique (Fig. 3) [4]. The operation speed of the ICs and doping techniques [5,6] will also be discussed.

## References

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[4] K. Higuchi et al., Appl. Phys. Express 6, 085101 (2013).

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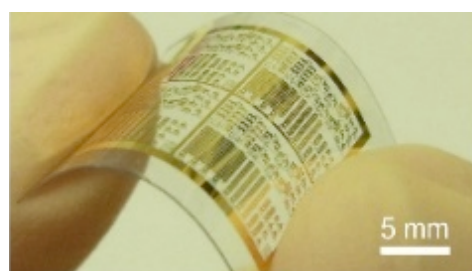


Fig. 1 Flexible carbon nanotube thin film transistors and integrated circuits.

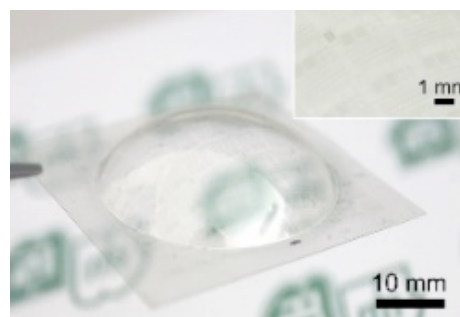


Fig. 2 All-carbon ICs formed into 3D shape.

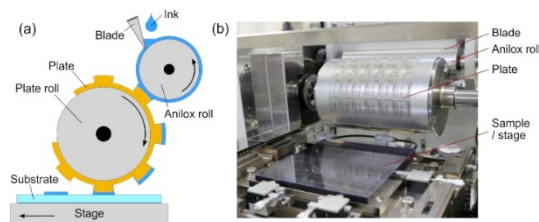


Fig. 3 Flexography for high-throughput printing fabrication of CNT TFTs.