

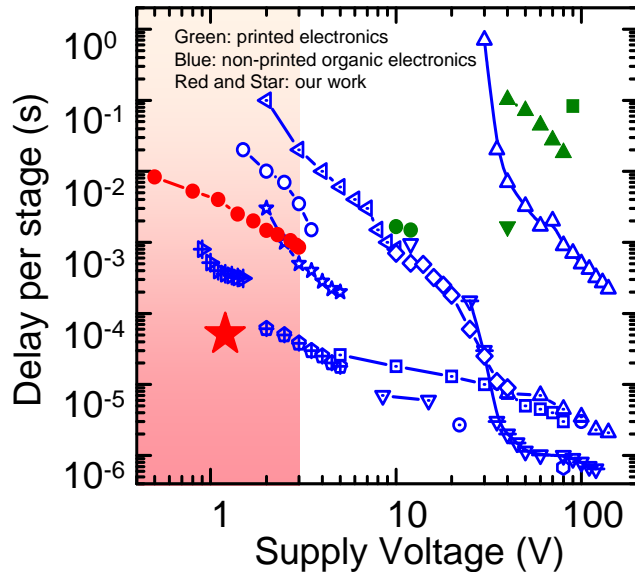
Flexible, Low Voltage Organic Digital Circuits

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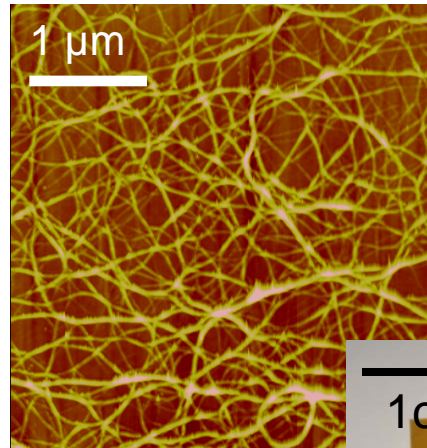
Chemical Engineering and Materials Science, University of Minnesota

NNIN Facilities utilized: Nanofabrication Center & Characterization Facility

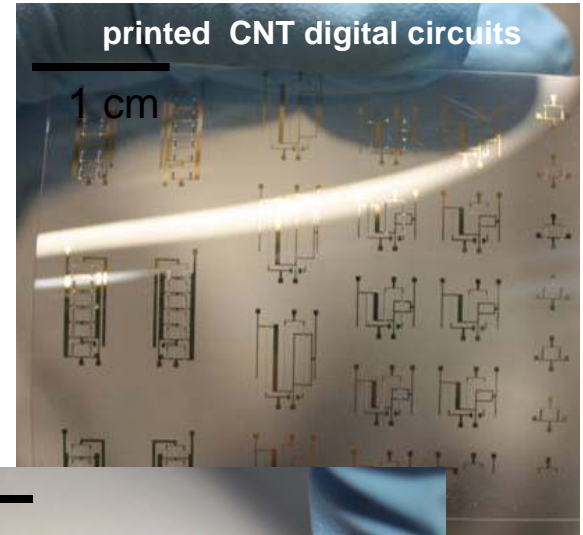
Use the printable electrolyte ion gel to achieve the flexible, low voltage digital circuits.



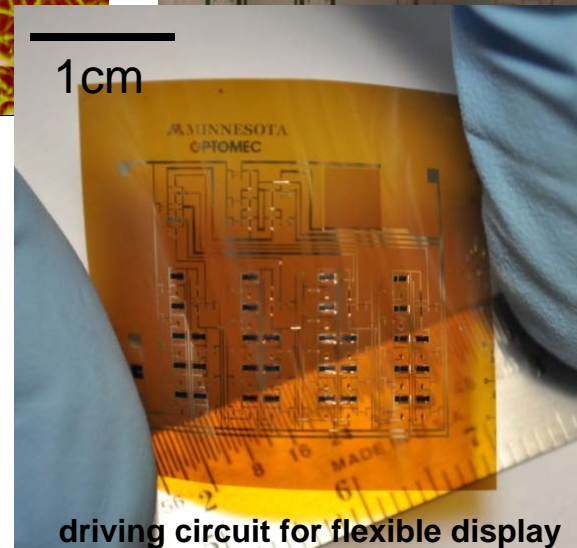
printed carbon nanotube thin film



printed CNT digital circuits



- Low operational voltage circuits use printable, high capacitance ion gel. Capacitance $\sim 10 \mu\text{F}/\text{cm}^2$.
- Printed, fast digital circuits based on carbon nanotubes (CNTs). Stage delay $\sim 50 \mu\text{s}$.
- Printed flexible OTFT circuits for display application.



M. Ha, *et al.* *ACS Nano*. **2010**, 4, 4388.

W. Zhang, *et al.* *IEEE ISCCC*, **2011**