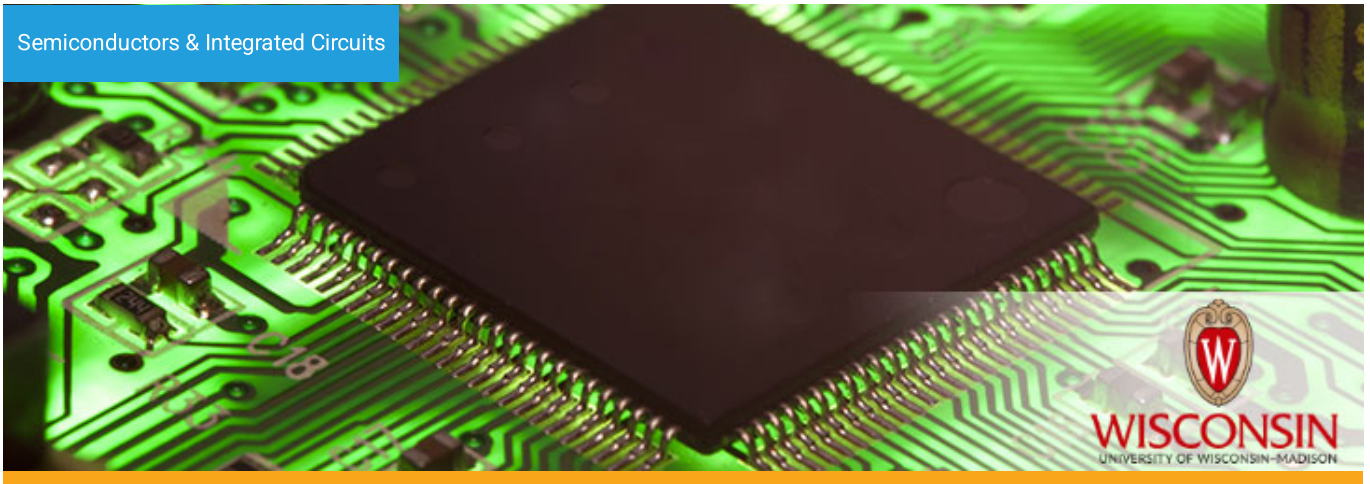




## TWO-DIMENSIONAL CARBON NANOTUBE LIQUID CRYSTAL FILMS FOR WAFER-SCALE ELECTRONICS

[View U.S. Patent No. 11,631,814 in PDF format.](#)

**WARF: P210216US01**

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### The Invention

UW researchers have now demonstrated that nanotubes collected at a liquid/liquid interface self-organize to form two-dimensional (2D) nematic liquid crystals that globally align with flow. The 2D liquid crystal assemblies are transferred and deposited onto substrates in a continuous process, generating dense arrays of nanotubes that are highly aligned, ideal for electronics. The excellent alignment and wafer-scale uniformity of the transferred assemblies enable FETs with exceptional on-state current density.

### Applications

Thin film electronics  
Biosensors  
RF electronics  
Logic electronics  
Microprocessors

### Key Benefits

Align array carbon nanotube FETs are projected to have improved power efficiency, electrostatic gate control, and switching speed as compared to conventional semiconductors FETs

### Additional Information

#### For More Information About the Inventors

- [Michael Arnold](#)
- [Padma Gopalan](#)

#### Publications

- [Read a news story about this technology.](#)

#### Tech Fields

- [Semiconductors & Integrated Circuits: Design & fabrication](#)

For current licensing status, please contact Jeanine Burmania at [jeanine@warf.org](mailto:jeanine@warf.org) or 608-960-9846

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