Organic Copolymer Semiconductor for Direct Detection of Ionizing Radiation

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2023 LANNS Symposium

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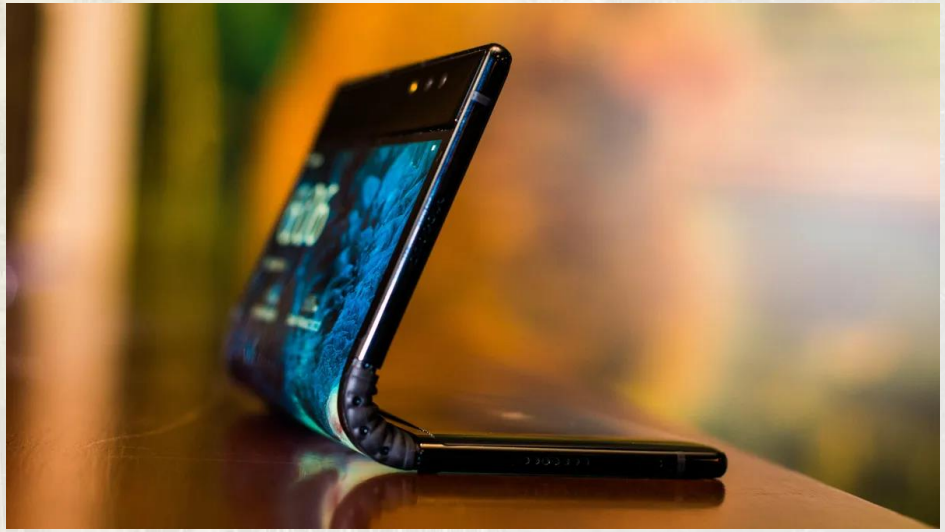
Background

What are organic based semiconductors?

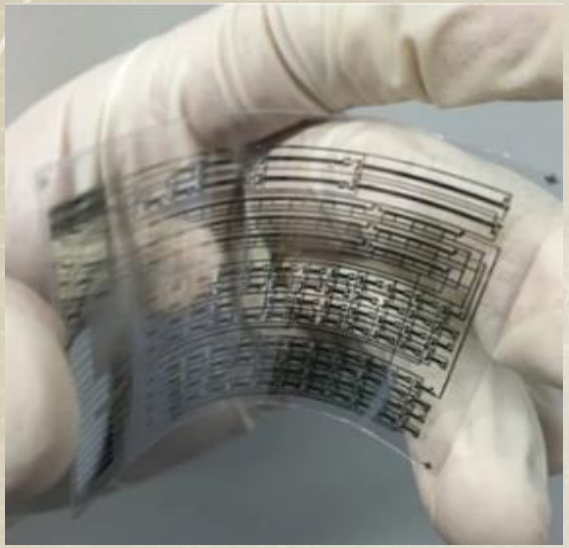
- Carbon and Hydrogen based materials

Current uses

- Organic LED (OLED)
- Organic based Solar Cells (OSC)
- Organic Transistors (OFET)



Angela Lang/CNET



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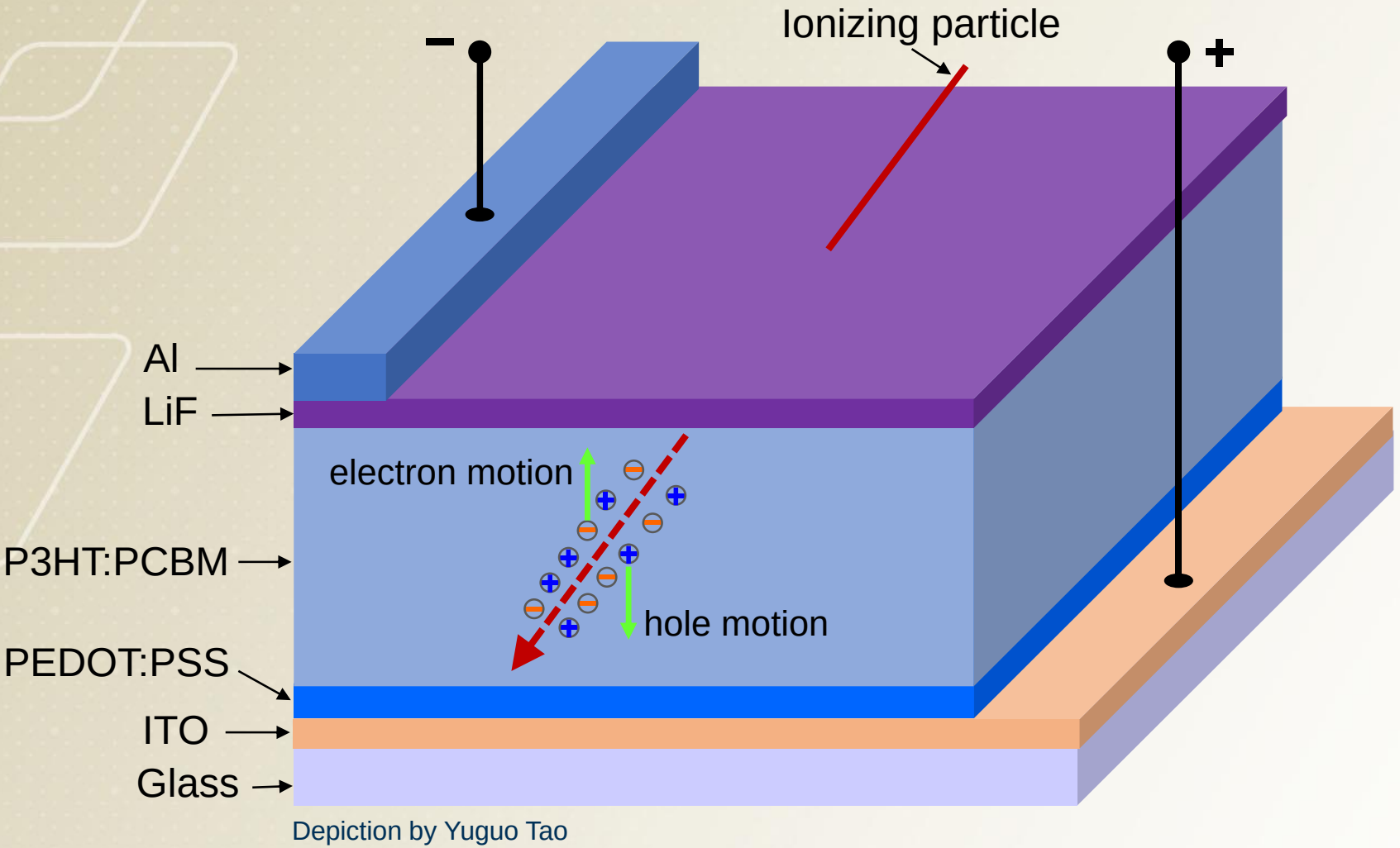
Current Research



Depiction by Yuguo Tao

- Glass Substrate
- Two electrode films (Al and ITO)
- Interaction Volume (P3HT:PCBM)
  - Copolymer Film

- Buffer materials
  - Improved Electron Injection (LiF)
  - Improved Hole Injection (PEDOT:PSS)

Future Research

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- Fabrication Optimization
  - Annealing Temperatures
  - Plasma Treatment
  - BHJ deposition
- Improvement of BHJ
  - Tertiary Polymer Film
  - Changes in Donor and Acceptor Polymer
- Flexible substrates
  - Improved Geometric Efficiencies
- Indirect Radiation Detection
  - Coupling with Organic Scintillator

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Acknowledgement

This material is based upon work supported by the Department of Energy / National Nuclear Security Administration under Award Number(s) DE-NA0003921.

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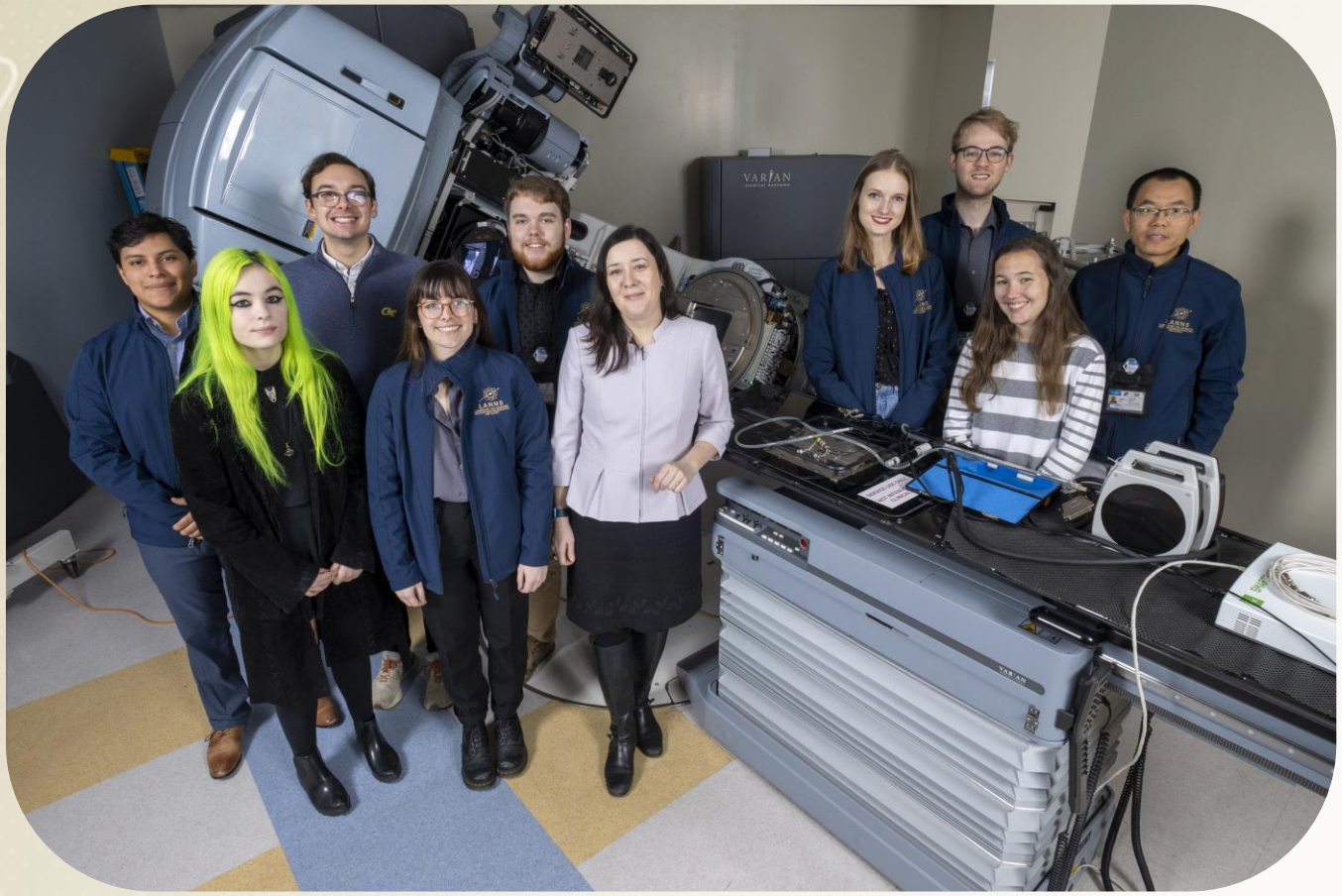
Thank you



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