

Topics Addressed by Group 1

- *Organic Electronics - Scope*
- *Unique Properties*
- *What are the Killer Apps*
- *Enabling Technology Needed*
- *Why ATP Help is Needed*

examples of the diverse areas included in the definition of organic electronics

- *Conducting devices (transistors, interconnects)*
- *Light emitting devices (OLED)*
- *Light transmitting devices (optical fibers)*
- *Electrical generating devices (detectors, solar cells)*
- *Resists (lithography)*
- *Electrical insulators (dielectrics)*
- *Substrates and packaging (flexible substrates, packaging materials)*



- Features in Common
- Processing
 - Manufacturing
 - Materials Research

Unique Properties

Organic Electronics Offer a New Manufacturing Paradigm Different From the Existing (Largely Off-shore) Infrastructure

- *Low cost*
- *Flexible substrates*
- *Low temperature processing*
- *Large area*
- *Low initial investments*
- *3D forming*

What are the Killer Applications?

What Are the Big Markets That Can Be Impacted by Applications Based on the Unique Advantages of Organic Electronics?

- **Displays**
 - ✓ entertainment
 - ✓ computer monitors
 - ✓ publishing
 - ✓ automotive
- **Optical interconnection**
 - ✓ communications
 - ✓ computing
- **Disposable electronics**
 - ✓ smart cards
 - ✓ greeting cards
 - ✓ medical devices
 - ✓ consumables
- **Lighting**
 - ✓ indicator lamps
 - ✓ area lighting
 - ✓ signs
 - ✓ automotive
- **Electronics**
 - ✓ circuit boards
 - ✓ switches and components
 - ✓ connectors
 - ✓ packaging
 - ✓ sensors

Enabling Technology Needed

Technical Barriers That Need to Be Overcome in the Next 3-5 Years to Achieve Market Success

- **Low cost manufacturing and processes and tools**
 - ✓ reel-to-reel stamping/printing/coating
 - ✓ packaging and encapsulation
- **Organic transistor**
 - ✓ simple low cost, high yield processing
 - ✓ device properties that are stable and usable for specific applications
- **Low cost electronics on flexible substrates**
 - ✓ integrated with organic transistors
 - ✓ compatible with amorphous silicon processing
- **Efficient light emitting device**
 - ✓ full color
 - ✓ energy efficient in application format
- **Optical interconnects**
 - ✓ low cost
 - ✓ plug-in installation

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Why ATP Help is Needed

- **Investment community is not prepared**
 - ✓ lack of a big success story to use as analogy
 - ✓ history of early failed attempts to develop products
 - ✓ reputation for unreliability
 - ✓ ATP can accelerate a success story
- **Needs skill sets that do not exist**
 - ✓ existing industries lack organic skill set
 - ✓ organic based industries lack application skill set
 - ✓ ATP can encourage strong complementary partners

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