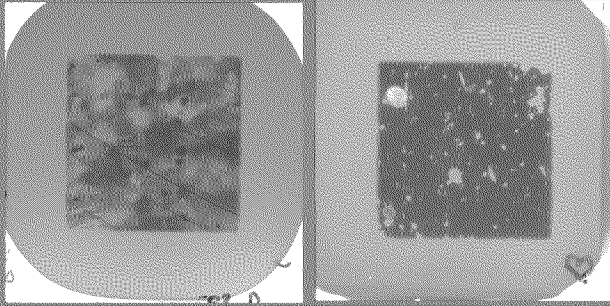
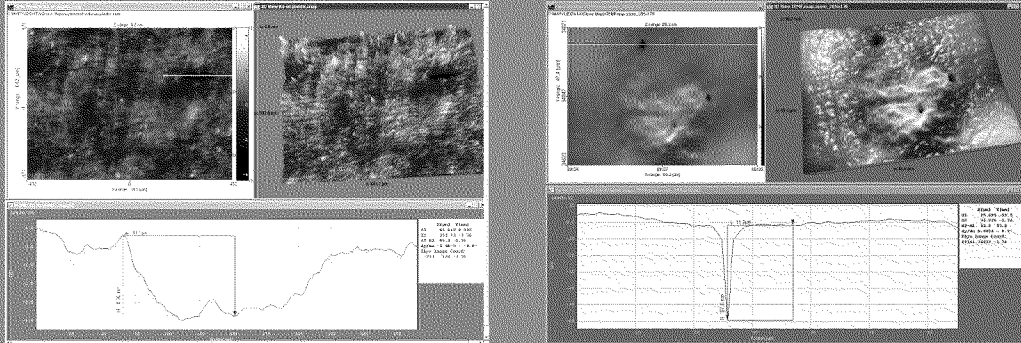


## Defect Library Buildup



- Spikes – plastic, handling
- Scratches - handling
- Pits – arcing, possible metal contamination of plastic
- Barrier Cracking – local adhesion issues (pre-contamination)



## Defect Pareto Analysis

SLIDE 55

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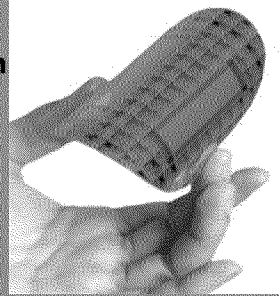
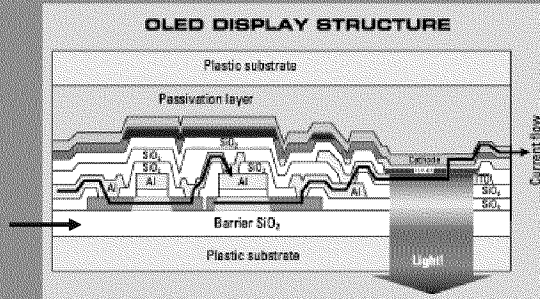
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# Flexible Electronics – Industry Challenges

(Future Application)

- Most of today's displays (TFT-LCDs) and semiconductor ICs (CMOS on Si) use substrates that are inflexible, heavy, brittle and expensive
- Cheap displays and electronics require cheap flexible substrates (plastics)
- Requires low-temperature barrier semiconductor and gate dielectric film



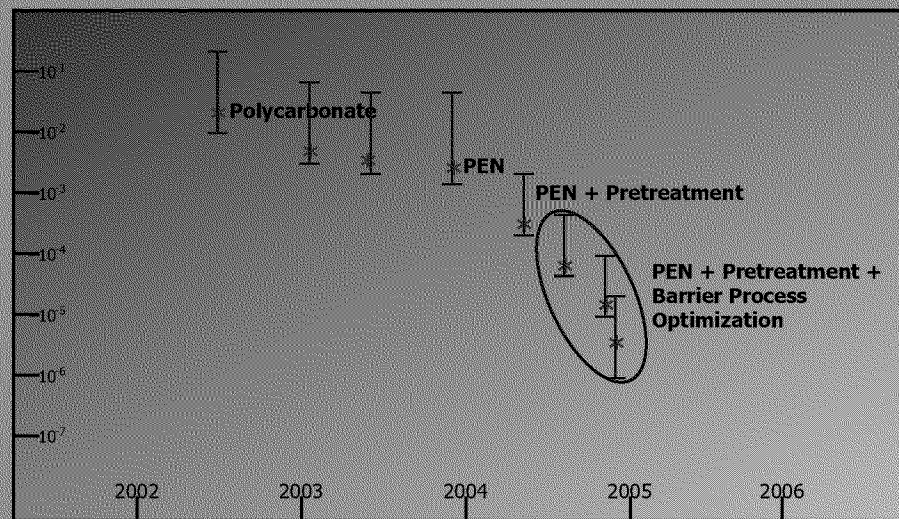
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## Single Layer Barrier on Plastic WVTR Performance Improvement History



WVTR (g/m<sup>2</sup>/day) vs Date

\* Median WVTR

**Consistent Improvement in Barrier Performance with < 2000A Single Layer Barrier**

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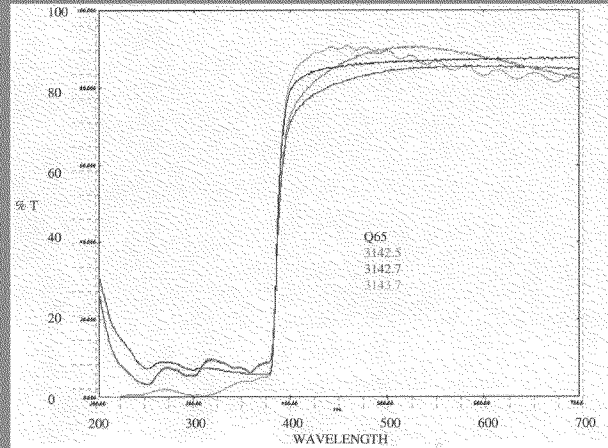
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## **% Transmission of Barrier Films on PEN (July, 2003)**

- % transmission of barrier film on PEN equivalent to bare PEN
- Transmission change minimal post boiling water test (4 hours)



SLIDE 58

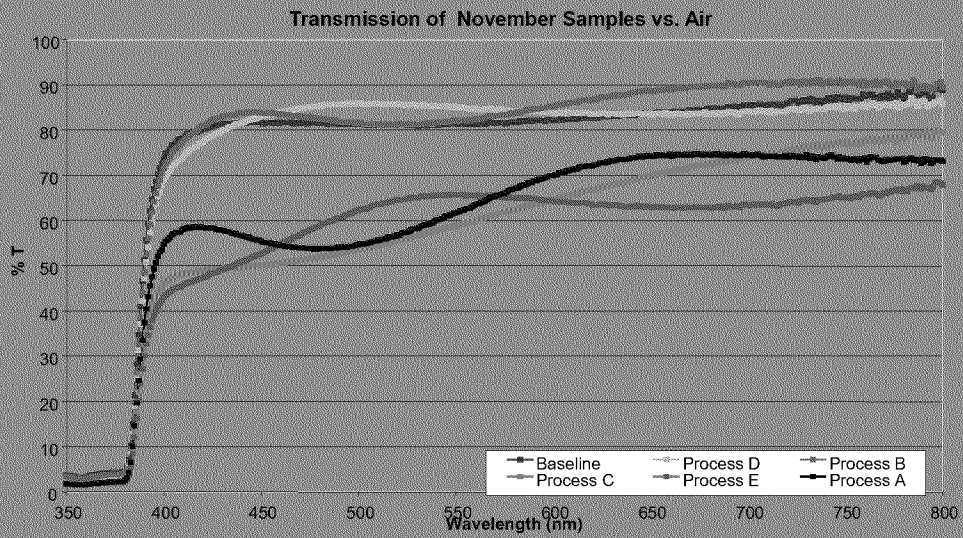
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## Dupont DOE Samples - % T (Nov '04)



### Tuning Some DOE Parameters affect %T

Lower %T Barrier may be useful for encapsulation or barrier lid for bottom emitting devices

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