OLED Progress on a Broad Front
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In the world of printed and thin film electronics, OLEDs appear to have the most potential for many years to come. This is because they are as relevant to lighting and signage as to moving colour displays. OLEDs have been early to commercialisation with sales of hundreds of millions of dollars yearly already. However, achieving the wide potential calls for advances in both device and production technology. To achieve these advances calls for new materials and new device geometry and deposition. We even need co-deposition of necessary ancillary components such as power sources and back plane drive circuits if we are to reduce cost and improve reliability (for example by having fewer interconnects). That calls for a wide range of developments including laminar flexible photovoltaics, batteries and fuel cells for power. Photovoltaics will sometimes need to be small in footprint and therefore high efficiency to achieve adequate power. In other OLED applications, such as airport signage and billboards, area and efficiency matter less than flexibility, low cost and adequate life and reliability. Different development programs across the world address the various options.

Examples of some of the exciting work now proceeding to develop different types of OLED display are seen at Arizona State University, the US Army Research Laboratory and Sharp Corporations of Japan. Nokia, the world's largest mobile phone company and, separately, the US Air Force are assessing the various OLED technologies with a view to using them. The UK Displays and Lighting Network pulls together UK efforts. Motorola, Xerox and PolyIC are developing printed transistor networks and CEA/Liten of France has recently made advances in these and both printed batteries and transistor networks. Merck, NanoDynamics. HC Starck, Honeywell and EMD Materials are developing new chemicals and inks and Dimatix is a leader in ink jet printing of electronics. The University of Manchester UK has developed printed microwave rectifiers and high switching speeds for OLEDs are certainly in prospect. However, one must not ignore competition for OLEDs in certain applications such as the new flexible LCD displays from ITRI Taiwan, electroluminescent displays from Pelikon UK and electrophoretic displays all have a major place in the future display market.

All these organisations will present at the major international conference on the subject “Printed Electronics USA”. It takes place in Phoenix Arizona, December 5-6 with presentations from Japan, Taiwan, Germany, Austria, France, the UK, Israel and elsewhere – all best in class speakers from the leading developers and users. There is even a tour of the legendary laminar display laboratory of Arizona State University. There are Masterclasses and a profusion of backup material. The conference looks at the big picture with the emphasis on commercialisation. See www.printelec.com and read “Printed Electronics 2006-2016” www.idtechex.com