Flexible Display Materials Research

Cadet Jeffrey A. Chin
United States Military Academy
West Point, New York

Dr. Sanchao Liu*, Dr. Jianmin Shi, and Dr. Eric Forsythe
U.S. Army Research Laboratory
Adelphi Laboratories, MD

ABSTRACT:

The materials in the array of flexible display technology greatly affect the efficiency and capabilities of device production. Flexible Display technology has many applicable possibilities into the Armed Forces utilization such as information storage/ dissemination, enemy detection, and making current displays in military use smaller and more efficient. Current materials laboratory research for Organic Light Emitting Diodes (OLEDs) includes creating a 4-layer device with the components of an anode, cathode, electron transport layer, and the hole transport layer. In the devices made for research some devices contain more layers, which include blocking layers and phosphorescent emitters to increase efficiency and emit color. This presentation will discuss the syntheses of novel molecules for OLED-based flexible display applications. Presentation will include devices fabricated on a glass substrate and the testing procedures including apparatus to measure current and voltage results (I-V curve). Based on the I-V data, it was determined the quality of the connectivity of the material. The importance of the analysis of this materials research is that improvements on efficiency can always be increased and the data gained has an influence on planning of mass production of devices.

KEYWORDS: flexible displays, organic light emitting diodes, anode, cathode, hole transport layer, electron transport layer, I-V curve

* Post-Doctorial researcher at ARL and mentor for summer research

CONTACT: Eric Forsythe, U.S. Army Research Laboratory, M/S AMSRD-ARL-SE-EE, Team Leader Display Technologies, Associate PM Flexible Display Center, Technology, Adelphi, MD, Tel: (301) 394-0606, Email: eric.forsythe@us.army.mil

CDT Jeffrey A. Chin, United States Military Academy, West Point, NY, Tel: (845) 515-3004 Email: Jeffrey.Chin@usma.edu