Recap of the Society of Vacuum Coaters Technical Conference (SVC TechCon | May 2017)

This year's SVC TechCon took place in Providence, RI. Advantech attended a series of presentations on various subjects, such as R2R deposition of organic TFTs and the use of High Current Pulsed Sputtering. We visited the accompanying vendor's exhibit and had in-depth discussions with two R2R system manufacturers: Emerson & Renwick from the U.K., FHR GmbH from Germany as well as Intellivation, Inc., located in Colorado.

KEY TAKEAWAYS

Presentations covered all fields of vacuum coating and surface technology on a range of topics from R2R coatings for specialty and high tech applications - clearly aimed at coming up with new concepts on making flexible electronics - to basic sputter technology, medical applications, hard coatings, optics and several others…

- Roll to Roll Processing of Flexible Electronics: Transistors, Circuits and Devices
  Hazel Assender, University of Oxford, U.K.

  Prof. Assender provided a general overview of the challenges one faces when doing flexible electronics in a R2R processing environment. Substrates, in particular the surface of substrates, are critical, as are the correct material and process selection. The University of Oxford operates a highly adaptable R2R coater equipped with thermal evaporation, sputtering as well as acrylic polymer application. A simple patterning system has been added to the coater as well to investigate simple TFT structures based on organic coatings. More details on that part were given in the following paper by one of Prof. Assender's students.

- Flexographic Patterning in Vacuum of Sacrificial Oil for Aluminum Contacts of Organic Transistors
  Thomas Cosnahan, University of Oxford U.K

  Thomas Cosnahan discussed using in-chamber patterning to make electrodes for TFTs based on organic semi-conductors. The structure he uses is fairly simple, and the patterning is mostly used to apply the Drain / Source electrodes on top of the TFT. The TFT structure is designed in a way that simple striping of the deposited aluminum is sufficient. The author was also mostly interested in determining how much masking fluid needs to be applied in order to achieve a clear pattern, but to have no residue left on the surface of the substrate. This

requires a very delicate balance, and it still is recommended to clean the substrate after the patterning.

- From Target to Substrate – About the Generation of Energetic Ions in HiPIMS Discharges
  Achim von Keudell, Inst. f. Physics, Ruhr-University Bochum, Germany

  This was a very interesting presentation about the generation of high intensity discharge regions using HiPIMS. The author presented data and illustrations on how these high intensity regions first develop locally and then – depending on power level and pulse length – start to race along the magnetic race track of the sputter cathode. The message here is clear – by using highly time resolved technologies such as extremely short pulses plasma effects can occur that can impact how the sputter process works.

  There is still a lot of research going for HiPIMS sputtering. In general, however, this technology is operated at a higher pressure than typical sputtering in order to achieve the high intensity discharges.

Contact us today to discuss more of what we learned at SVC TechCon 2017 & how it applies to Advantech's technology!
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