

Wednesday Afternoon, April 25, 2018

Bunshah Award Honorary Lecture
Room Town & Country - Session HL

Bunshah Award Honorary Lecture

5:45pm HL-1 A Retrospective View of Plasma-assisted PVD Innovations
Since the 1960's, *Allan Matthews*, University of Manchester, UK **INVITED**

Since the first plasma-assisted PVD processes for the deposition of engineering coatings first became available in the 1960's, there have been several distinct waves of development, created by innovators whose work opened-up new possibilities for these processes. The first systems were DC diode type "ion plating" processes for the production of metallic coatings, used mostly for corrosion and wear protection. The next wave involved enhanced plasma systems which augmented the diode systems with ionisation-enhancing modifications and permitted the deposition of ceramic coatings as well as improved metallic ones. The third wave involved additional ion and vapour source developments to further optimise processes, especially for multi-component, layered, nanocomposite and duplex systems. We have now entered the fourth wave, led mostly by development teams at companies, who are designing deposition systems to meet the challenges posed by the need to coat commercial products for industrial applications in a manufacturing world which is becoming increasingly digitalised. This often requires high-volume continuous and semi-continuous coating processes, with enhanced process monitoring and control. This talk will be a personal perspective on some of the key innovations throughout these four waves of development, concentrating on the first three and highlighting some of the many individuals who have led the innovations and the key ideas which they brought forward, drawing from the speaker's own experience over the period, including his interactions with some of those innovators.

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