WATERLOO | ENGINEERING
MECHANICAL AND MECHATRONICS ENGINEERING

seminar series

Nanomaterials and Interface Engineering for Printed Electronics

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Dr. Yiliang Wu

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Yiliang Wu is a Principal Scientist at Xerox Research Centre of Canada (XRCC), leading Printed Electronics Platform. Yiliang obtained his Ph.D. degree in polymer science from Tokyo Institute of Technology, Japan, in 1999. After two years of postdoctoral studies at Queen's University, Kingston, Canada, he joined XRCC, Mississauga, to kick-start the Printed Electronics project. Yiliang is also an adjunct professor at Department of Chemical Engineering, McMaster University, teaching one undergraduate course and co-supervising graduate students. His research interests are in advanced electronic materials and additive manufacturing processes for flexible electronics. Yiliang is the holder of 165 issued US patents and author/co-author of more than 90 peer-reviewed papers and 3 book chapters.

Printed Electronics based on advanced functional materials and additive manufacturing process could bring the advantages of sustainability, flexibility, and smart functionality to our daily life. Sustainability is due to the greener additive fabrication processes which use less amount of material and produce less chemical waste; flexibility is inherent to the use of plastic substrate and/or organic active layers; and many different electronic materials have been successfully developed to provide sufficient electrical performance for various applications such as sensors, solar cell, displays, etc.

Discussion will include a few printable nanomaterials and their interactions at the devices interfaces, using 3-terminal thin-film transistors as an example, for printed electronics application. Such materials include silver nanoparticle inks, semiconductor nanocomposites with carbon nanotube or graphene additives, as well as matching dielectric based on vertically phase-separated polymer blends. We have shown that high-performance thin-film transistors could be printed using these nanomaterials by carefully consideration of the materials interactions (wettability, contact resistance, etc.) at the device interfaces.

DATE: **Monday, November 10th, 2014**

TIME: **10:30 – 11:30**

ROOM: **E5 3052**