UNIVERSITY of GUELPH

COLLEGE of ENGINEERING AND PHYSICAL SCIENCES

DEPARTMENT OF CHEMISTRY

UG CHEMISTRY

Departmental Seminar

Going Against the Grain (Boundaries): Amorphous Organic Photovoltaics in the Nanocrystalline Era

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ROYAL MILITARY COLLEGE OF CANADA

Wednesday October 18, 2023 at 1PM

ONLINE (MS Teams)

Host: Dr. Dmitriy Soldatov

Abstract:

Molecular glasses are small molecules that can readily form glassy phases and do not recrystallize on standing. This is typically due to very slow crystallization kinetics that stem from irregular molecular structures and poor packing. As a result, molecular glasses are desirable for applications involving thin films, and constitute an appealing alternative to polymers because of their monodisperse nature.

Our group has developed a series of triazine-based molecular glasses that show outstanding resistance to crystallization and has used derivatives containing reactive functional groups that can be covalently bonded to chromophores to synthesize glass-forming adducts.

This strategy has been used to synthesize glass-forming donor and acceptor materials for organic photovoltaics (OPV). While OPV cells typically use polycrystalline materials that yield a bulk heterojunction architecture composed of small domains, optimal performance is highly dependent on processing conditions to achieve the optimal domain size. For simplifying the fabrication process, it may be worthwhile to use amorphous materials for the active layer instead. The results of devices incorporating these materials in either partially or fully amorphous binary or ternary active layers will be presented.

All are welcome to attend!