

## “Methods for increasing the efficiency of power generation from water evaporation”

Water contains an incredible amount of energy – enough, in fact, to meet the annual global energy demand three times over. However, very little of this energy is currently used. In recent years, scientists have demonstrated that it is possible to obtain sustained energy from natural water evaporation processes. This area of power generation has been coined ‘hydrovoltaics’, and hydrovoltaic devices could soon provide us with a source of 100% green, renewable energy.

Hydrovoltaic devices generate sustained power by the simple flow of water driven by evaporation and capillary action. The nature of the interactions between water and an active hydrovoltaic surface facilitate the formation and transfer of charges, which enables power generation. As evaporation is ubiquitous and continuous, so too is this generation of power. The requirements for such power generation are uniquely minimal, as hydrovoltaic devices rely solely on naturally occurring processes. This would make the implementation of such devices simple.

In this seminar, I will discuss device fabrication, synthetic routes for active material, electrode design, advancements in power efficiency, and functionality in various weather conditions. Hydrovoltaic devices can overcome many of the limitations associated with conventional and renewable energy sources. This means that such devices could be especially useful in remote areas such as in Northern Canada. Hydrovoltaics can be used to generate power anywhere evaporation is occurring and represents an important step towards green power generation.