



**Wolfson Department of Chemical Engineering Special Seminar  
Departmental seminar room (3<sup>rd</sup> floor), Wolfson Department of Chemical  
Engineering, Tuesday March 12<sup>th</sup> at 1:30pm**

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**Nitrate removal from high salinity solutions by electrolytic methods**

In recent years the quality of potable water has been negatively impacted by agricultural, commercial and industrial activities and has experienced rising nitrate levels. Ingestion of nitrate can cause detrimental health effects, especially in infants. Available processes of nitrate removal, such as electrodialysis, reverse osmosis and Donnan dialysis, involve nitrate transfer from a source stream into a concentrated waste stream. These methods leave the largely unsolved problem of disposing the nitrate waste stream in an environmentally safe way. The objective of this research was to investigate the removal of nitrate from a high salinity waste stream generated by a Donnan dialysis process. An increasingly attractive option for nitrate disposal is electrochemical denitrification where nitrate is converted into other products by electroreduction on solid electrodes. Experiments were carried out with both batch and continuous electrochemical systems. Systematic runs were carried out to investigate effects of design parameters (electrode selection, current density, temperature and residence time) and of solution composition (coexisting ions, nitrate concentration and NaCl/Na<sub>2</sub>SO<sub>4</sub> salinity). Results of this study demonstrate the feasibility of nitrate disposal from a high salinity waste stream by an electrolytic method.

Refreshments will be served at 1:15pm