



**Wolfson Department of Chemical Engineering Seminar
Lecture Hall 6, Wolfson Department of Chemical Engineering,
Wednesday June 20th at 1:30pm**

Nitzan Melki- Dabush

MSc student (supervisor: Prof. Rafi Semiat)
Department of Chemical Engineering, Technion

Removal of inorganic water contaminates by iron oxide

Iron oxides/hydroxides are established adsorbents for the removal of inorganic contaminants from aqueous solutions. Silica scale is widely encountered problem in many industrial operations such as cooling towers, geothermal applications, saline waters desalination, and produced water reuse. The objective of the research is to develop a hybrid adsorption/filtration process for the removal of silica from aqueous solutions, focusing on adsorption by iron oxy/hydroxide agglomerates (IOAs) and ultrafiltration (UF). Batch experiments were conducted to characterize of the adsorption kinetics and mechanism in DI water and simulated brackish waters. The efficiency of the adsorption process was evaluated by the overall removal of the silica, its residual concentration in the treated water and by the cost of chemicals. Continuous fixed bed adsorption and stirred tank reactor experiments were carried out to examine the feasibility of applying continuous IOAs adsorption process. Hybridization of adsorption with separation of the spent IOAs by UF revealed excellent separation of the adsorbent with the residual silica (unabsorbed) passing through to the product water.

Refreshments will be served at 1:15pm