



The College of Graduate Studies and the College of Science Cordially Invite  
You to a

**Master Thesis Defense**

Entitled

*DEVELOPMENT OF HYDROXYAPATITE-POLYMER SORBENTS FOR THE REMOVAL OF HEAVY  
METAL IONS FROM WASTE WATERS*

By

Eleanora Charnetskaya

Faculty Advisor

Dr.Yaser Greish, Department of Chemistry  
College of Science

Date & Venue

1:00 PM

Thursday, November 15, 2018  
Room 40, F3 Building

Abstract

The current Thesis research aimed at the study of using Hydroxyapatite, ( $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$ ; HAp) nanoparticles immobilized within a porous cellulose acetate membrane for the removal of heavy metal cations from waste water. Independently, both compounds have been used for these purposes where the mechanism of their action is based on the adsorption of these pollutants onto their surfaces. In case of HAp, adsorption of inorganic pollutant ions is followed by diffusion and exchange for  $\text{Ca}^{2+}$  ions within the HAp lattice structure. On the other hand, cellulose acetate possesses functional groups along its structure that bind with heavy metals cations as well. A combination of these two potential adsorbents in the form of porous membranes, is therefore, expected to have combined effect. Moreover, a composite membrane comprising HAp and cellulose acetate will be developed. The proposal is therefore focused on the preparation, characterization and evaluation of these membranes for the removal of  $\text{Cd}^{2+}$  ions from simulated waste water

**Keywords:** Hydroxyapatite, calcium-deficiency, thermal treatment, nanoparticles, heavy metal ions, nanofibers, waste water treatment.