

### INTRODUCTION

Hydrogels are cross-linked hydrophilic polymer networks that are capable of retaining a large quantity of water within the network without dissolving. The ability of hydrogels to absorb water arises from hydrophilic functional groups attached to the polymeric backbone, while their resistance to dissolution arises from cross-links between network chains. The most characteristic property of hydrogel is that it swells in the presence of water and shrink in the absence of water. The objectives for this research are to prepare hydrogels from pullulan and polyethylene imine with epichlorohydrin as the cross-linker, and examine their ability to absorb heavy metals and organics.

### HYDROGEL SYNTHESIS

REACT PULLULAN WITH NaOH AND EPICHLOROHYDRIN (1.5 hr)

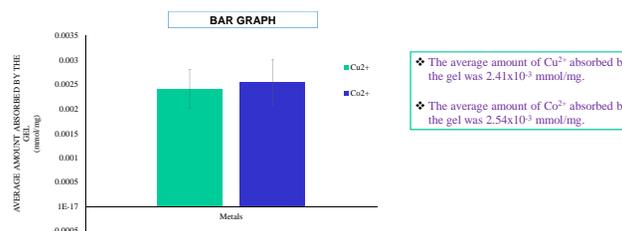
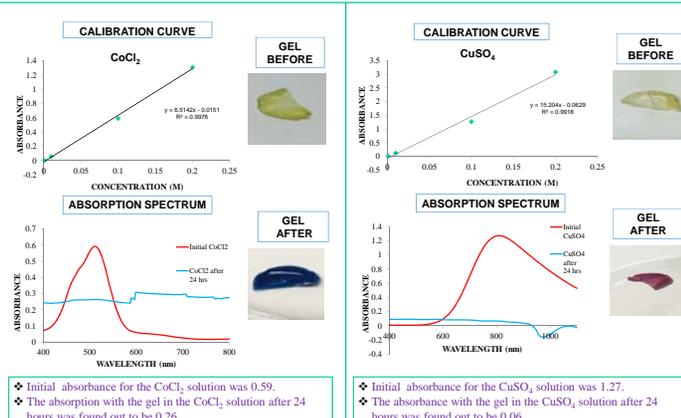
ADD POLYETHYLENE IMINE AND ALLOW TO GEL

WASH GEL WITH DISTILLED WATER

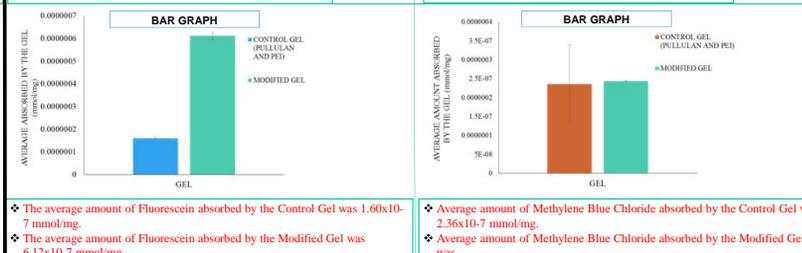
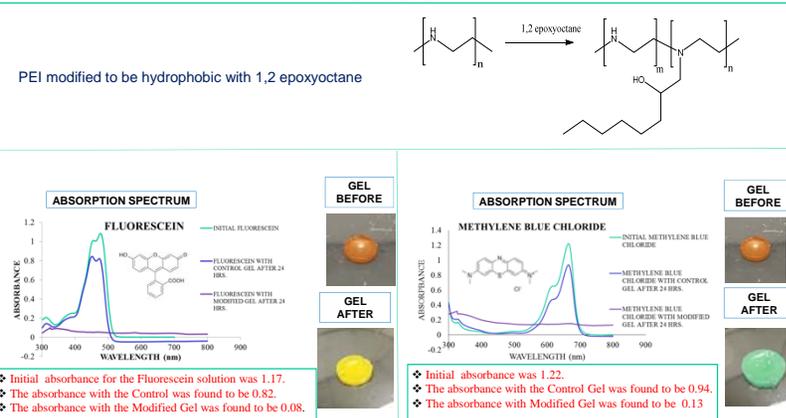
DRY GELS IN OVEN AT 60°C FOR 24 HOURS

### RESULTS

#### METALS



#### ORGANICS



**CONCLUSION:** We successfully prepared the hydrogels from pullulan and polyethylene imine. From our analysis, for the metals, the gel is able to absorb Cu<sup>2+</sup> and Co<sup>2+</sup> from solution. For organics, the hydrophobic modified gel absorbs the neutral model organic (fluorescein) five times more than the control gel (pullulan-PEI). For charged model organic (methylene blue) absorption for the hydrophobic modified gel and control gel are almost same.

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