

International Pre Conference Workshop on

# Microbial Ecology & Eco Systems

June 28-29, 2018 | Alexandria, Egypt

## Bioremediation of uranium VI from waste water by immobilized microgreen algae- spongy composite

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This work aimed at attempting bioremediation of uranium VI from waste water by two unicellular immobilized microgreen algae- spongy composite, as natural biopolymers. The characterization of algae spongy composite was manifested by Scanning Electron Microscope (SEM), UV and Fourier transform infrared spectra (FTIS). FTIS clarified the presence of hydroxyl amine groups and uronic acids at the surface of algae spongy composite. An experiment for adsorption of uranium (VI) by algae- spongy composite was carried out through which the composite impeded to 15 cm length glass column (2cm diameter and 50 cm length) then, multistatic pump was fixed at the top opening of the column and the other ends of the rubber tube immersed in the waste water. As the pump start and operates the sample withdraw from the waste with the rate of (2mls\min). The flow rates was repeated three times. The final effluent at each run was collected for titration. The pseudo first-order and pseudo second-order equations were used to analyze the kinetic data, and the rate constants were determined. The equilibrium adsorption data of environmental factors on U (VI) adsorption, including: contact time, pH, and initial concentrations of U (VI) were examined by the Langmuir and Freundlich. The experimental results manifested that the adsorption of U (VI) by spongy composite was strongly dependent on pH with maximum adsorption of uranium was indicated at pH 2.5, and shaking at 400 rpm. The adsorption reached equilibrium within 15 minutes. The maximum adsorption capacity was increased with increasing the concentration of U (VI) up to 125ppm. It reached 12.5mg\g free Scendesmus and 108 mg\g immobilized Scendesmus\ spongy composite.

**Keywords:** Adsorption-isotherm, bioremediation, immobilized algae, multistatic pump, spongy composite, uranium.

### Biography

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