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BIOSORPTION PROCESS FOR URANIUM (VI) BY USING ALGAE-YEAST- SILICAGEL COMPOSITE ADSORBENT

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Many yeast, algae bacteria and various aquatic flora are known to be capable of concentrating metal species from dilute aqueous solution Many researcher have found that non living biomaterials can be used to accumulate metal ions from environment In recent studies mainly two process are used in biosorption experiments These are the use of free cells and the use of immobilized cells on a solid support A variety of inert supports have been used to immobilize biomaterials either by adsorption or physical entrapment This uptake is often considerable and frequently selective and occurs via a variety of mechanisms including active transport ion exchange or complexation, and adsorption or inorganic precipitation Biosorbent may be used as an ion exchange material Adsorption occurs through interaction of the metal ions with functional groups that are found in the cell wall biopolymers of either living or dead organisms

In this study the algae-yeast silica gel composite adsorbent was tested for its ability to recover U(VI) from diluted aqueous solutions Macro marine algae (*Jania rubens*) yeast (*Saccharomyces cerevisiae*) and silica gel were used to prepare composite adsorbent The ability of the composite biosorbent to adsorp uranium (VI) from aqueous solution has been studied at different optimized conditions of pH concentration of U(VI) temperature, contact time and matrix ion effect was also investigated The adsorption patterns of uranium on the composite biosorbent were investigated by the Langmuir Freundlich and Dubinin-Radushkhevic isotherms The thermodynamic parameters such as variation of enthalpy ΔH variation of entropy ΔS and variation of Gibbs free energy ΔG were calculated The results suggested that the macro algae yeast silicagel composite sorbent is suitable as a new biosorbent material for removal of uranium ions from aqueous solutions

Key words Biosorption, uranium, algae, yeast, biomaterial, composite adsorbent