

## **Porównanie procesu biosorpcji i bioakumulacji mikroelementów przez makroalgę *Vaucheria sessilis***

Izabela Michalak, Katarzyna Chojnacka

Instytut Technologii Nieorganicznej i Nawozów Mineralnych, Politechnika Wrocławska,  
Wrocław

## **The comparison of biosorption and bioaccumulation of microelement by macroalga *Vaucheria sessilis***

### **Summary**

In the present paper, two methods, which are used to bind metal ions from aqueous solutions by the biomass – biosorption and bioaccumulation, were compared. These processes could find potential application in the production of mineral feed additives from the biomass of macroalga - *Vaucheria sessilis*, which will constitute a carrier of highly bioavailable microelements (Zn(II), Mn(II), Cu(II) and Co(II)) for animals. However, there are essential differences between these processes: the first one concerns fresh biomass, the second one – dry biomass. The aim of the work was to choose the method of the biomass enrichment. The equilibrium capacities for biosorption process were higher than in case of bioaccumulation for the same process parameters – for Co(II) ions, the biosorption capacity was 37,9% higher than for bioaccumulation, for Cu(II) ions – 27,4% higher, for Mn(II) – 17,7% higher, and for Zn(II) – 9,33%. Also, the rate constants for biosorption were much higher than for bioaccumulation. The better method to enrich the biomass turned out to be biosorption, which additionally could be performed for considerably higher initial concentration of microelement ions than bioaccumulation.

### **Key words:**

biosorption, bioaccumulation, microelement ions, macroalga *Vaucheria sessilis*

### **Adres do korespondencji:**

Izabela Michalak, Instytut Technologii Nieorganicznej i Nawozów Mineralnych, Politechnika Wrocławska, ul. Smoluchowskiego 25, 50-372 Wrocław