## L. ADDOUR, L. Z. BAKHTI, D. BELHOCINE, H. GRIB, <u>H. LOUNICI</u>, A. PAUSS, D.L. PIRON, and N. MAMERI.

Filtration of zinc ions utilising pretreated Streptomyces rimosus biomass. J. Chem. Technol. Biotechnol. 78, 12, 1274-1280. **(2003).** 

## ABSTRACT:

The performance of biofiltration of zinc utilising pretreated Streptomyces rimosus was studied. Streptomyces rimosus biomass is able to bind zinc ions in batch mode. The biomass granules may be regenerated easily by using a biomass pretreatment which confers rigidity to biosolids, without decreasing the zinc uptake capacity, thus allowing collection of the biomass by filtration. Accordingly, biomass was pretreated with an anionic enzymatic tension active product (Extran AP41) and regeneration with a cleaning product (HCl) was successfully realised. It was shown that the optimum concentration of biomass and pressure range are found to be between 50 and 120 g dm<sup>-3</sup> and 0.5 and  $1 \times 10^5$  Pa, respectively. Complete regeneration was reached after three cycles under optimal experimental conditions when the biosorbent was saturated with synthetic ZnCl2 solution. The filterability of biosolids was demonstrated. A combination of a batch reactor and a filtration process made it possible to increase the performance of the complete treatment process. The biosorption capacity of the biomass to bind Zn ions was slightly increased (from  $X = 14 \text{ mg g}^{-1}$  in batch mode to X =16.1 mg g<sup>-1</sup> in a process combining batch reactor and pressure nitration) and the experimental contact time was considerably reduced. Integration of the filtration process produced a dewatering cake which considerably facilitated the regeneration operation.