

Sulfide Removal from Liquid Using Biofilm on Packed Bed of Salak Fruit Seeds

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Abstract : This study focused on the removal of sulfide from liquid solution using biofilm on packed bed of salak fruit seeds. Biofilter operation of 444 hours consists of 6 phases of operation. Each phase lasted for approximately 72 hours to 82 hours and run at various inlet concentration and flow rate. The highest removal efficiency is 92.01%, at the end of phase 7 at the inlet concentration of 60 ppm and the flow rate of 30 mL min⁻¹. Mathematic model of sulfide removal was proposed to describe the operation of biofilter. The model proposed can be applied to describe the removal of sulfide liquid using biofilter in packed bed. The simulation results the value of the parameters in process. The value of the rate maximum spesific growth is 4.15E-8 s⁻¹, Saturation constant is 9.1E-8 g cm⁻³, mass transfer coefisient of liquid is 0.5 cm s⁻¹, Henry's constant is 0.007, and mass of microorganisms growth to mass of sulfide consumed is 30. The value of the rate maximum spesific growth in early process is 0.00000004 s⁻¹.

Keywords : biofilm, packed bed, removal, sulfide, salak fruit seeds.

Conference Title : ICECCT 2017 : International Conference on Environmental Chemistry and Chemical Technologies

Conference Location : Prague, Czechia

Conference Dates : September 04-05, 2017