The Analytical Expression of Steady-State Concentration of Mixture of Toluene and N- Propanol in the Biofilm: Akbari-Ganji's Method

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This paper discusses the biofiltration of toluene and propanol mixtures in a biofilter filled with a compost-woodchip combination. The base of the model is the mass transfer at the biofilm interface and chemical oxidation in the biofilm and gas phases. For all feasible experimental values of parameters, an approximate analytical expression of propanol and toluene concentration profiles in both phases has been determined using Akbari-Ganji's method. In addition, the numerical solution of the problem is provided in this paper using Matlab software. The obtained results are validated with the available numerical and previous results. The model presented here can be utilized to design purposes.

Keywords Mathematical modelling; nonlinear equation; numerical simulations; toluene, *n*- propanol; Akbari-Ganji's method (AGM)

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