

26<sup>th</sup> International Conference on  
Nanotechnology and Nanomedicine

May 13, 2022 | Webinar

Received date: 17-12-2021 | Accepted date: 22-12-2021 | Published date: 25-05-2022

## Artificial neural network model for modeling the fixed bed adsorption of tartrazine dye from aqueous solution

**Sediri Meriem**

University of Médéa, Algeria

In this work an artificial neural network (ANN) was used as an intelligent artificial approach and developed to predict the dynamic adsorption (fixed bed adsorption) of tartrazine dye which is a dye on activated carbon which is a material using as an adsorbent under different conditions. eight inputs (time, area surface, particle diameter, mass of adsorbent, apparent density, molar mass, initial concentration and flow rate) corresponding to eight neurons were used in the input layer, ten neurons in the hidden layer and one in the output layer for the reduced concentration. For the learning, a Levenberg Marquardt back-propagation algorithm was applied. The tangent sigmoid and linear transfer functions are used for the hidden layer and the output layer respectively. The results showed a high correlation coefficient  $R^2=0.9983$  between experimental and estimated data. The error between experimental and predicted data in terms of root mean square error RMSE is very minimal equal to 0.012. These results provide the high capacity of ANN to store experimental data and to describe the dynamic adsorption phenomena.

### Recent Publications

1. Sediri Meriem, Hanini Salah. Wastewater treatment by adsorption

process on mineral activated carbon: modeling and prediction using an intelligent artificial approach. IOP Conf. Ser.: Mater. Sci. Eng. 2021; 1204(1): 012006

2. Asma Adda, Salah Hanini, Mohamed Abbas, Meriem Sediri. Novel adsorption model of filtration process in polycarbonate track-etched membrane: Comparative study. Environmental Engineering Research. 2020; 25(4): 479-487
3. M Sediri, S Hanini, H Cherifi, M Laidi, S Abbas Turki. Dynamic Adsorption Modelling of P-nitrophenol in Aqueous Solution Using Artificial Neural Network. J. Mater. Environ. Sci. 2017; 8(7): 2282-2287.

### Speaker Biography

Sediri Meriem is a doctor and lecturer in process engineering of Higher Education at university of Médéa, Algeria. She is a member in Biomaterials and Transport Phenomena laboratory, her field of research interests of Application of cognitive science for the modeling and optimization of processes, Application of software as artificial computational intelligence for process design, Modeling and control of chemical processes, Transport phenomena, Environment and treatment of effluents. She has published articles in different journal indexing by Thomson Reuters and Scopus.

e: sedirim2@gmail.com

 Notes: