MANIPAL UNIVERSITY JAIPUR

International Winter School-Manipal University Jaipur [IWSMUJ]-2023

[Offline Mode]

Project Overview

Name of Project: Removal of antibiotics from aqueous solutions using silica microspheres

Name of Mentors: Dr. Anees Y. Khan (Department of Chemical Engineering, MUJ) and Dr. Monika Sogani (Department of Biosciences, MUJ)
Session: Jan.-Feb. 2023
Language of instruction: English
Number of contact hours: 75
Credit awarded: 03

Objectives of the project

Removal of antibiotics from aqueous solutions is important for water conservation, its re-use and environmental safety. In the proposed work, silica microspheres will be used as adsorbents to remove water soluble antibiotics from aqueous solutions. Adsorption isotherms will be generated to know the maximum antibiotics removal capacity of the adsorbent.

The objectives of the work are as follows:

1. To synthesize silica microspheres with desired functional groups
2. To perform batch studies for removal of antibiotics from aqueous solutions.

Organization of the project

Total contact hrs 75		
1st week:	20 hrs (Lab work)	**Task 1:** Synthesis of silica microspheres with desired functional groups. **Task 2:** Literature review (will continue till the end of the project)
2nd week:	20 hrs (Lab work)	**Task 3:** Batch adsorption studies: Kinetic studies where removal of antibiotics from aqueous solutions will be recorded as a function of time and equilibrium time will be obtained. **Task 4:** Midterm exam will be in the form of a presentation
3rd and 4th week:	35 hrs (Lab work)	**Task 5: Batch adsorption studies:** Isotherm studies where antibiotics removal capacity of the adsorbent will be studied with respect to different initial antibiotic concentrations at equilibrium and temperature. **Task 6:** End term exam will be in the form of a presentation

Mode of conduction of the project: **Offline**

Brief profile of the instructor

Dr. Anees Y. Khan is working as associate professor and head of the department of Chemical Engineering at Manipal University Jaipur (MUJ). He did is masters in chemical engineering from Birla Institute of Technology and Science (BITS) Pilani (India) and PhD from Indian Institute of Technology (IIT) Bombay (India). He focused on mesoporous silica for applications in biosensing, and catalysis during his PhD. Post PhD, he worked at National Chemical Laboratory Pune (India) as Research Associate on monolithic materials. He has established Porous Materials Laboratory at MUJ where he is focusing on making a wide range of porous materials for water treatment and healthcare applications.

https://scholar.google.co.in/citations?hl=en&user=JlYMDUwAAAAJ

Dr. Monika Sogani has been Senior Associate Professor in the Department of Biosciences, Manipal University Jaipur, since February 2021, prior to which she was associated with the Department of Civil Engineering, Manipal University Jaipur, as Associate Professor in Environmental Sciences and Engineering since 2015. She received her doctoral degree in Environmental Biotechnology and has also completed her postdoc research in Environmental Engineering at the Department of Chemical Engineering and Biotechnology, University of Cambridge, UK, on a prestigious research fellowship under the Schlumberger Foundation's Faculty for the Future program (2017–2019). She has about 18 years of teaching and research experience while working with different institutes of engineering, sciences and technology. Her research interest is the wastewater treatment and bio-energy sector including bioremediation of environmental pollutants and resource recovery. She has received various externally funded research grants and travel grants from many national and international agencies including Department of Science & Technology, Government of India (DST India), SERB India, All India Council for Technical Education (AICTE) India, Council of Scientific & Industrial Research (CSIR) India, Asian Development Bank Institute (ADBI) Tokyo, Schlumberger Foundation Netherlands, Society of Environmental Toxicology and Chemistry (SETAC) Europe, IHE Delft Institute for Water Education (UNESCO IHE Delft), German Academic Exchange Service (DAAD), etc. Dr Sogani has published more than 35 research papers/book chapters in high rated international peer reviewed journals and reputed books that include Bioresource

Technology, Journal of Hazardous Materials, and Science of the Total Environment etc. and have presented her research work at more than 30+ International Conferences in Countries like India, USA, UK, Singapore, Italy, Switzerland, Germany and is also a recipient of few prestigious awards/fellowships in recognition of her research work so far.