

## Abstract

CO<sub>2</sub> capture is an important area for industries concerned with reducing carbon footprint and increasing environmental sustainability. It is particularly important for the petroleum industry because of the high-reward application of CO<sub>2</sub> as solvent for EOR. The cost for CO<sub>2</sub> capture is high and developments are needed to bring it down. Challenges facing cheap and efficient capture of CO<sub>2</sub> can be alleviated through Process Intensification (PI) of CO<sub>2</sub> capture processes. Different PI technologies have been investigated over the years with rotating packed bed (RPB) technology playing an increasing role due to its potential of a several-order-of-magnitude mass transfer enhancement induced by the HiGee field.

In this talk, the speaker will present the potential of HiGee equipment, in particular, RPB to intensify CO<sub>2</sub> capture processes and contribute to the reduction of many industries' carbon footprint. He will also introduce the research progress in his group on improving the design of HiGee equipment using both Computational Fluid Dynamics (CFD) and Machine Learning (ML).



## Speaker's Bio

Dr. Berrouk was awarded a PhD degree from The University of Manchester (UK) in the area of Computational Fluid Dynamics (CFD) and turbulence modeling with particular emphasis on Large Eddy Simulation of turbulent multiphase flows. He has 14 years of university lecturing experience. He taught different courses in different departments both at the undergraduate and graduate levels. He has been the leader of

many industrial projects. Currently he is participating in the management of KU Research Centre on Catalysis and Separation as a theme leader. During his academic career, Dr Berrouk published two books, three book chapters and more than 130 papers on his ongoing research work in peer-reviewed international journals and conference proceedings. He was member of the technical Committee of GASCO/ADGAS (ADNOC gas companies) Gas-Sub-Committee (2011-2015). He was also member of ADPEC 2013, 2014, 2015, 2016 and 2017 Technical Committee for the "Gas Processing Technology" and "Talent & People" themes. Dr Berrouk is a recipient of many awards: Algerian Government Award (2001) for top 1% Algerian Engineers, Worldwide University Network Award (2005) for best research collaboration proposal, Manchester Science Enterprise (2006) for second best business proposal, ADNOC R&D Bright Finding & Integration Research Pen Award for outstanding deliverables researchers (2013), ADNOC R&D General Management Committee Award for outstanding technical support (2013 and 2014), ADNOC R&D Book of Wisdom Award– Completed research Project Members (2014), and ADNOC R&D Science Lantern Faculty Award – Faculties who worked or supported ADNOC R&D Projects (2014)