



Mustafa Saleh Nasser, PhD, MSc, Bsc

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DOB: 22/05/1977
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RESEARCH INTRESTS

My research areas are categorized in the following main areas:

- **Rheology of Complex fluids:** work here considers the characterisation of the properties of complex fluids such as colloidal dispersions, polymers, polyelectrolytes, emulsions and micro-emulsion. The main applications are: Drilling fluids formulations for high pressure and high temperature applications, viscoelastic surfactants (VES) used in acid well stimulations and in the Enhanced oil recovery (EOR) process during the oil and gas exploration.
- **Colloidal and interfacial phenomena:** this considers the control of surface forces and related phenomena to colloid aggregation (control of floc structure, size and density).
- **Waste water treatment:** work here considers method of treatments of colloidal fines /sludge through the flocculation, coagulation and flotation to achieve the optimal design in batch sedimentation, centrifugation, filtration, micro-filtration and gravity thickeners. My current focus is the treatment of the produced water from oil and gas production using different and hybrid methods such as developing selective emulsifiers, photocatalytic degradation and membrane separations.

TEACHING INTREST

I have developed good teaching experience and skills the interaction with students of the courses I have thought:

- I have thought the following courses, **Main Courses:** Fluid Mechanics, Mass Transfer, Heat Transfer, Petroleum Refining, Solid-Liquid Separation, Plant design & process optimization, , Unit Operation, Applied Mathematics and Numerical Analysis.

Special Topics: Colloids and Interfaces, Non-Newtonian Fluid /or Rheology of complex fluid

EDUCATION & WORK History

➤ **Qatar University (2014-present)**

Assistant Professor

➤ **King Fahd University of Petroleum and Minerals (KFUPM) (2012-2014)**

Assistant Professor

➤ **University of Nizwa, Sultanate Oman (2009-2012)**

Head Department of Chemical Engineering

➤ **University of Nizwa, Sultanate Oman (2008-2009)**

Assistant Professor

➤ **University of Manchester, Manchester, UK (2007-2008)**

Postdoctoral Researcher

➤ **University of Manchester, Manchester, UK (2004-2007)**

Ph.D. in the Department of Chemical Engineering

Title: *Characterisation of Flocculated Kaolinite Dispersions in Settling, Compression and Shear*

➤ **University of Twente, Enschede, The Netherlands (2001-2003)**

M.Sc. in the Department of Chemical Engineering Process Engineering (Process Design and Development).

Title: *Rheological Optimization of The Structured Yoghurt Gels Caused By The Shear Flow and Elongation Flow.*

Advanced Master Courses: Techno-economic Evaluation, Advance Thermodynamics, Reactive Separation, Numerical Methods for Chemical Engineering, Polymerization Technology, Industrial Applied Chemistry, Prosperities of Polymers, Training Project Management, Process Conceptual design, and Process and Plant Design.

➤ **Jordan University of Science and Technology (J.U.S.T), Irbid, Jordan (1996-2001)**

B.Sc. in the Department of Chemical Engineering

Final year project: *Cadmium Adsorption Using West Tires with Proposed methods to enhance the Adsorption.*

RESEARHC EXPERIENCE

➤ **Department of Chemical Engineering, University of Nizwa, (2008-2012)**

- The Impact of Sludge Rheology on Design and Operation of Waste Water Treatment Plant. Founded by Oman Research Council, **83,000 RO (RO 1 = USD 2.6)**. Lead-Principle Investigator (Lead-PI) (2012-2014).
- Flocculation and Rheology of papermaking suspension. Founded by University of Nizwa, **10,000 RO (RO 1 = USD 2.6)**. Principle Investigator (Lead-PI)(2011-2012).
- Synthesis of Mesoporous silica fibers (MSF) as adsorbent applied industrial waste water treatment. Founded by Oman Research Council, **50,000 RO (RO 1 = USD 2.6)**. Co-Principle Investigator (Co-Lead PI)(2009-2011).

➤ **Department of Chemical Engineering, King Fahd University(KFUPM) (2012-present)**

- Destabilization of Oil-Water Emulsions in EOR Produced water. Founded by KFUPM, **327,000 SR (1 USD= 3.7 SR)**. Principle Investigator (Lead-PI)(2013-2015).
- Removal of Heavy Metals using Nanocomposites Founded by KFUPM, **680,000 SR (1 USD= 3.7 SR)**. Co-Investigator (CI)(2013-2014)

➤ **Department of Chemical engineering, University of Manchester (2004-2007)**

Advisors: Dr. Alec. E. James

Investigating the mathematical modeling and experimental validation of the role of polyelectrolyte, electrolyte and surfactant solution on the flocculation/coagulation and rheological behaviour of waste water flocculated suspensions. The research target is to characterize the colloidal suspensions from the individual particles to fully network state to improve the solid liquid separation process.

**Department of Chemical engineering , University of Twente, The Netherlands
(2001-2002)**

Short Projects done in the Master Program in Process Engineering:

- Detailed Process design for manufacturing of Propylene oxide Styrene monomer.
- Conceptual design for Supercritical Fischer Tropsch synthesis.
- Enhancement of 1, 4-Butanediol Devolatilisation Flux during Polycondensation of Polybutylene Terephthalate (modeling and simulation).
- The behavior of Porous Catalyst Particles in View of Internal Mass and Heat Diffusion Effects (Modeling and Simulation).
- Modeling of heat transfer in external boundary layer during polymerization of propylene and ethylene.

➤ **Friesland Coberco Dairy Food Research Centre, Deventer, The Netherlands (2002-2003)** *Advisors: Prof. Dr. Ir. A.B. de Haan and Dr. Hans Nieuwenhuijse*

The university of Twente has selected me as a Process designer to carry research at Friesland research centre (December 2002-December 2003). The project was the rheology of food suspensions during processing. It involves pilot-plant-scale production and further downstream processing.

Thesis Supervision

At the present I am involve in supervising MSc and PhD students, the details are:

1. Musaab Ibrahim Magzoub, MSc Student , thesis title ' Development of Stable Drilling Fluid Formulations Using Local Sources'.
2. He Saeed Deen Ma, MSc Student , thesis title ' *Destabilization of Oil-Water Emulsions in Oilfield Produced Water to Enhance Separation in Dissolved Air Flotation*'.
3. Musbah Abdullah, MSc student, thesis title ' *Photo-Catalytic Process for Biorefractory Wastewater Treatment*'.

PROFESSIONAL AFFILIATIONS

- Member of British Society of Rheology, UK.
- Member of Society of Chemical Industry (SCI), UK.
- Member of American Institute of Chemical Engineering (AIChE), USA.
- Act as a Reviewer to the: Journal of Separation and Purification Technology, Colloid and surface Sciences A, Desalination, Industrial & Engineering Chemistry Research and Chemical Engineering Research and Design.

FELLOWSHIP AND AWARDS

- Ph.D. Scholarship from the Engineering and Physical Sciences Research Council (EPSRC), UK (2004-2007).
- Messel Travel Award from the Society of Chemical Industry (SCI) (2007)
- Alumni Travel Awards from the University of Manchester (2007)
- Two Years M.Sc. Scholarships from the Department of Chemical Engineering, University of Twente, The Netherlands (2001-2003)

KEY SKILLS

- IT Skills:

- Proficient in many Microsoft Office packages (Word, Excel etc), UNIX and LINUX operating systems.
 - Excellent in the use of many Engineering programs, data base and software (Maple, Aspen Plus, Design II)
- **Languages:** Arabic (Native speaker) and English (fluent spoken and written).

PUBLICATIONS

Patents

1. Magzoub, M. I., **Nasser, M.S.**, Hussein ,I.A., Mahmoud, M., ‘Thermochemical Upgrading of Ca-Bentonite for oil and gas drilling applications, *submitted to USA Patent office.*

Refereed Journals

1. **Nasser, M. S.**, and James, A. E., (2006) ‘Settling and sediment bed behaviour of kaolinite in aqueous media,’ *Separation and Purification Technology*, **51**, 10-17 (Elsevier).
2. **Nasser, M. S.**, and James, A. E., (2007) ‘The effect of polyacrylamide charge density and molecular weight on the flocculation and sedimentation behaviour of kaolinite suspensions,’ *Separation and Purification Technology*, **52**, 241-252 (Elsevier).
3. **Nasser, M. S.**, and James, A. E., (2007) ‘Effect of polyacrylamide polymers on floc size and rheological behaviour of kaolinite suspensions,’ *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, **301**, 311-322(Elsevier).
4. **Nasser, M. S.**, and James, A. E., (2007) ‘Numerical simulation of the continuous thickening of flocculated kaolinite suspensions,’ *International Journal of Mineral*, **84**,144-156 (Elsevier).
5. **Nasser, M. S.**, and James, A. E., (2008) ‘Degree of flocculation and viscoelastic behaviour of kaolinite-sodium chloride dispersions,’ *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, **315**, 165-175 (Elsevier).
6. **Nasser, M. S.**, and James, A. E., (2008) ‘Compressive and shear properties of flocculated kaolinite-polyacrylamide suspensions,’ *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, **317**, 211-221 (Elsevier).

7. **Nasser, M. S.**, and James, A. E., (2009) 'The effect of electrolyte concentration and pH on the flocculation and rheological behaviour of kaolinite suspensions,' *Journal of Engineering Science and Technology*, **4**,430-446 (Elsevier).
8. Kaewkannetra, P., **Nasser, M. S.**, Twaiq, F.A., (2010) 'Settling behavior of glycerol during biodiesel production' *World Applied Sciences Journal* **9** (12), 1408-1413(Scopus).
9. **Nasser, M. S.**, and Twaiq, F.A. (2011)' An experimental study of the relationship between settling flocs and eroded flocs of kaolinite in aqueous media', *Chemical Engineering Research and Design*, **89**, 768-776 (Elsevier).
10. **Nasser, M. S.**, Twaiq, F.A., and Onaizi, S.A., (2012) 'An Experimental Study of the relationship between the properties of cohesive beds and eroded flocs', *Minerals Engineering*, **30**, 67-74 (Elsevier).
11. Twaiq, F.A., **Nasser, M. S.**, Alhajri, S., and Alhasani, M., (2012) 'Adsorption Kinetics of Alcohols over MCM-41 Materials' *International Journal of Engineering and Applied Sciences*, **6**, 308-315 (Scopus).
12. Onaizi, S.A., **Nasser, M. S.**, and Twaiq, F.A., (2012) 'Micellization and Interfacial Behavior of a Synthetic Surfactant-Biosurfactant Mixture' *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, **415**, 388– 393 (Elsevier).
13. **Nasser, M. S.**, Twaiq, F.A. and Onaizi, S.A., (2013) 'Effect of Polyelectrolytes on the Degree of Flocculation of Papermaking Suspensions' *Separation and Purification Technology*, **103**, 43–52 (Elsevier).
14. Twaiq, F.A., **Nasser, M. S.**, (2013) 'Kinetics of Palm Oil Cracking in Batch Reactor' *World Academy of Science, Engineering and Technology* **73**, 1360-1364.
15. Abu-Jdayil, B., **Nasser, M. S.**, Ghannam, M., (2013) 'Structure Breakdown of Stirred Yoghurt in a Circular Pipe as Affected by Casein and Fat Content' *Food Science and Technology Research*, **19**, Issue 2, 277-286.
16. **Nasser, M. S.**, (2014) 'Characterization of floc size and effective floc density of Industrial Papermaking Suspensions' *Separation and Purification Technology*, **122** ,495–505 (Elsevier).
17. Onaizi, S.A., **Nasser, M. S.**, and Twaiq, F.A., (2014) 'Lysozyme binding to tethered bilayer lipid membranes prepared by rapid solvent exchange and vesicle fusion methods' *European Biophysics Journal*, **43**, Issue 4-5, 191-198 (Springer).

18. Twaiq, F.A., **Nasser, M. S.**, Onaizi, S.A., (2014) ‘Langmuir–Hinshelwood Kinetic Study For Palm Oil Catalytic Cracking Over AL-MCM-41 methods’ *Reaction Kinetics, Mechanisms And Catalysis*, **112**, 477–488 (Springer).
19. Onaizi, S.A., **Nasser, M. S.**, and Twaiq, F.A., (2014) ‘Adsorption and Thermodynamics of Biosurfactant, Surfactin, Monolayers at the Air-Buffered Liquid Interface’ *Colloid and Polymer Science*, **292**, 1649–1656 (Springer).
20. W. Al-Sadat, F. Chang, H.A. Nasr-El-Din, **M. S. Nasser**, I.A. Hussein (2014) Laboratory Evaluation of the Effects of Additives and pH on the Thermorheological Behavior of a Viscoelastic Zwitterionic Surfactant Used in Acid Stimulation, *Journal of Petroleum Science and Engineering*, **122**, 458–467 (Elsevier).
21. W. Al-Sadat, **M. S. Nasser**, F. Chang, H.A. Nasr-El-Din, I.A. Hussein (2014) Rheology of a Viscoelastic Zwitterionic Surfactant Used in Acid Stimulation: Effects of Surfactant and Electrolyte Concentration, *Journal of Petroleum Science and Engineering*, **Accepted** (Elsevier).
22. Mirghani, M., Al-Mubaiyedh, U. A., **Nasser, M.S.**, Shawabkeh, R., (2014) ‘Experimental study and modeling of photocatalytic reduction of Pb^{2+} by WO_3/TiO_2 nanoparticles’ *Separation and Purification Technology*, **Accepted** (Elsevier).
23. Adesina , A., **Nasser, M.S.** , Hussein, I. A. (2014) ‘ Comparative Analysis of the Effect of Organoclay, Boron Nitride and Fluoropolymer on the Rheology and Instabilities in the Extrusion of High Density Polyethylene’ *Journal of Applied Rheology*, Submitted.
24. Twaiq, F.A., **Nasser, M. S.**, Onaizi, S.A., (2014) ‘Effect of the Degree of Template Removal from Mesoporous Materials on the Adsorption Behavior of Heavy Oil from Aqueous Solutions’ *Frontiers of Chemical Science and Engineering*, submitted
25. Adesina , A., **Nasser, M.S.** , Hussein, I. A. (2014) ‘Rheology of organoclay assisted extrusion of HDPE using Particle Image Velocimetry’ *Journal of non-Newtonian Fluid Mechanics* , Submitted.
26. Mirghani, M., **Nasser, M.S.**, Shawabkeh, R., (2014) ‘Optimization of synthesis conditions of TiO_2 nanoparticles using Sol-Gel method’ *Separation and Purification Technology*, submitted (Elsevier).

Conferences

1. **Nasser, M. S.**, and James, A. E., (2007) 'Compressive and shear rheology of clay suspensions' Proceeding of the British Rheology Society conference (meeting of the non-Newtonian club), Unilever R & D, Port sun light, Liverpool, UK.
2. **Nasser, M. S.**, and James, A. E., (2007) 'The effect of polyacrylamide on the settling behaviour of kaolinite dispersions,' Proceeding of the European Congress of Chemical Engineering- 6, Copenhagen, Denmark.
3. **Nasser, M. S.**, (2009) 'Numerical simulation of the continuous thickening of flocculated waste water suspensions' Proceeding of the Ninth Gulf Water Conference, 22-25 March, 2010, Sultanate of Oman.
4. **Nasser, M. S.** , (2009) 'Degree of flocculation and rheological behavior of waste water colloidal suspensions' Proceeding of the Ninth Gulf Water Conference, 22-25 March, 2010, Sultanate of Oman.
5. Thanoon, W.A., and **Nasser, M. S.**, (2010) 'Design of Engineering Curriculum Considering Sustainable Development Role' Proceeding of the International Conference on Engineering Education ICEE-2010, 18-22 July, 2010 Gliwice, Poland.
6. Twaiq, F.A., and **Nasser, M. S.** , (2011)' Adsorption Kinetics of Alcohols over Mesoporous Silicious Material' Proceeding of the CUTSE International Conference, 7-9 November, 2011, Sarawak, Malaysia.
7. Al rashdy, S., and **Nasser, M. S.** , (2011) 'Settling Behavior Of Flocculated Kaolin Suspension' Proceeding of the 1st National Symposium on Engineering Final Year Projects, 24-25 May, 2011, University of Nizwa, Sultanate of Oman.
8. Sultan, H., and **Nasser, M. S.** , (2011) 'Degree Of Flocculation Of Polyacrylamide Papermaking Suspension' Proceeding of the 1st National Symposium on Engineering Final Year Projects, 24-25 May, 2011, University of Nizwa, Sultanate of Oman.
9. Twaiq, F.A., and **Nasser, M. S.**, (2012). Performance of Mesoporous Organosilicates on the Adsorption of Heavy Oil from Produced Water. Proceeding of the 2nd International Conference on Fundamental and Applied Sciences (ICFAS2012), 7-9 June, Malaysia.
10. Al Ryami, S., **Nasser, M. S.**, and Twaiq. F.A., (2012) 'Effect Of Gel Composition On The Characteristics Of Mesoporous Silica Materials' Proceeding of the 2nd National Symposium on Engineering Final Year Projects, 24-25 May, 2011, University of Nizwa, Sultanate of Oman.

11. Al Zadjali, A., **Nasser, M. S.**, (2012) 'The use of Polyacrylamide in the sewage waste treatment' Proceeding of the 2nd National Symposium on Engineering Final Year Projects, 24-25 May, 2011, University of Nizwa, Sultanate of Oman.
12. **Nasser, M. S.**, (2013) 'Effect of polyacrylamide polymers on floc size and rheological behavior of papermaking suspensions' AIChE November 3-8, 2013, San Francisco, CA, United States.

Confidential Research Projects (Reports)

1. **Nasser, M. S.**, Nasir, A., Habash, M., (2002), 'Conceptual design for Supercritical Fischer Tropsch synthesis', Founded by **Sasol**-The Netherlands and Process development school, University of Twente: Enschede- The Netherlands (School Library).
2. **Nasser, M. S.**, Ismail, T., (2002) 'Enhancement of 1, 4-Butanediol Devolatilisation Flux during Polycondensation of Polybutylene Terephthalate' Founded by **DSM**-The Netherlands and Process development school, University of Twente: Enschede- The Netherlands (School Library).
3. **Nasser, M. S.**, Ismail, T., (2002) 'Detailed Process design for manufacturing of Propylene oxide Styrene monomer' Process development school, University of Twente: Enschede- The Netherlands (School Library).
4. **Nasser, M. S.**, Stevens, Pippa, (2002) 'Modeling of heat transfer in external boundary layer during polymerization of propylene and ethylene' Process development school, University of Twente: Enschede- The Netherlands (School Library).
5. **Nasser, M. S.**, Stevens, Pippa, (2002) 'The behavior of Porous Catalyst Particles in View of Internal Mass and Heat Diffusion Effects' Founded by **SHELL**-The Netherlands and Process development school, University of Twente: Enschede- The Netherlands (School Library).
6. **Nasser, M. S.**, (2003) 'Rheological optimization of the yoghurt casein gel breakdown (caused by the shear flow and elongation flow) during the stirred yoghurt production' Founded by **Friesland & Campina**-The Netherlands and Process development school, University of Twente: Enschede- The Netherlands (School Library).

References

Available Upon Request

