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Mohamed Hamed

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SUMMARY

Ph.D. candidate in Energy, Environmental and Chemical Engineering Department with experience in modeling and design of multiphase reactors. Outstanding leadership and communication skills. Fluent in English and Arabic.

EDUCATION

[2007-2011] Doctor of Philosophy

- PhD Candidate in Energy, Environmental and Chemical Engineering department (GPA: 4), Washington University in Saint Louis
- **Dissertation**:"Hydrodynamics, Mixing, Mass Transfer and Scale-up of Bubble Columns with Internals"
- **Research experience**:
  - Development of a 1-D hydrodynamic model to simulate the gas velocity profile in bubble columns and its validation at different conditions and scales
  - Design and validation of novel techniques and models for the quantification of gas phase mixing and mass transfer in multiphase reactors
  - Design of experiments and bubble column setups to study the effect of internals on flow behavior and bubble dynamics in bubble columns
  - Development and validation of a novel scale-up approach for bubble column reactors
  - Modeling of Slurry bubble column reactors using different approaches (ADM, mechanistic models, 2D models)

[2007-2011] Master of Science in Energy, Environmental, and Chemical Engineering

- Master of Science in Energy, Environmental and Chemical Engineering (GPA: 4), Washington University in Saint Louis

[2001-2006] Bachelors of Engineering

- BCs in Chemical Engineering, Alexandria University
- Graduated with DISTINCTION grade with honors and second ranked among classmates
- **Graduation project**: Design of an electrochemical unit for the disinfection of swimming pools, 2nd place in MIE (Made in Egypt) national competition

SKILLS

- **Multiphase reactor techniques**:
  - Design and development of gas and liquid tracer experiments and mass transfer experiments
  - Utilization of CT, DSCT, and 4 point fiber optical probe
  - Installation and design of 2D and 3D bubble column reactors with and without internals

- **Computer skills:** Aspen Custom Modeler, MatLab, FORTRAN, Polymath, COMSOL multiphysics

- **Language:** Fluent in English and Arabic

PRESENTATIONS & PUBLICATIONS

1. Hamed, M; Dudukovic, M. and Al-Dahhan, M. "On Bubble Columns with internals"- GLS9 (8th World Congress of Chemical Engineering 2009- Montreal, Canada, August 23-27, 2009
2. Hamed, M; Dudukovic, M. and Al-Dahhan M. "Gas Phase back-mixing in bubble column with internals"- BIOENERGY II: FUELS AND CHEMICALS FROM RENEWABLE RESOURCES - Rio de Janeiro, Brazil, March 8-13, 2009
3. Youssef, A.; Hamed, M., Dudukovic, M. and Al-Dahhan, M. "Novel scale-up methodology for bubble column reactors" (2009), International Journal of Chemical Reactor Engineering (accepted).

RELATED TRAINING

- [July-October 2010] **RENTECH, Colorado, USA**: Modeling of Slurry bubble column reactors
  - Development of a model for Rentech's Product demonstration unit
  - Analysis of plant data and fitting the model parameters to match plant data
  - Design of a large scale bubble column reactor for Rentech's new plant using the developed model

- [June-September 2005] **DE HEUS feed factory, Den Bosch, Holland**: Methods of production and analysis of all types of kettle feed.
  - Chemical analysis of different types of feed for quality assurance
  - Monitoring, control, and optimization of the production process

- [June-August 2004] **BAM institute, Berlin, Germany**: micro structural analysis of degradation mechanism of building materials by means of microscopy, SEM, and MXRF
  - Use of microscopy, SEM, and MXRF in the chemical and physical analysis of building materials
  - Reasons of cracking due different chemical reactions within building materials
  - Testing of new potential compounds for use as building materials

- [June 2003] **ARAB PETROLEUM PIPELINES CO. "SUMED"**: Safety and oil analysis.
  - Online chemical analysis of oil obtained from piping lines
  - Design and optimization of oil storage tanks
  - Use of safety devices used in oil plants

TEACHING EXPERIENCE

[2007-Present] Washington University in Saint Louis, School of Engineering, Energy, Environmental, and Chemical Engineering Department

- Elementary Principles of Chemical Processes (ChE351) [Prof. Y. Jun]
- Transport Phenomena II (ChE368) [Prof. P. Ramachandran]
- Kinetics and reaction Engineering Principles (EEC503) [Prof. M. Dudukovic]

[09/16/2006-08/15/2007] Alexandria University, Faculty of Engineering, Chemical Engineering Department

- Elementary Principles of Chemical Processes (ChE351) [Prof. M. EL Kahaiay]
- Chemical Engineering Thermodynamics (ChE320) [Dr. G. Melsen]
- Chemical Reaction Engineering (ChE471) [Prof. A. El-Seoud]
- Fluid Mechanics Engineering (ChE 225) [Prof. Dr. N. Kamal]

PROFESSIONAL SERVICE & HONORS

- VP of Special Projects - Graduate and Professional Council (GPC) – 2009-2010
- School of Engineering representative in the Graduate and Professional Council (GPC) – 2008-2010 and Graduate Student Senate (GSS) – 2008-2009
- School of Engineering representative in the Graduate Student Senate (GSS) – 2008-2009
- School of Engineering representative in the Professional and Graduate Student Coordinating Committee (ProGradS) -2008-2009
- Participated in "Education Without Boarders" conference in with a paper on 'E-Learning in Egypt', Abu-Dabi-UAE-2005
- The **Exemplary Student of the academic year 2005-2006** in Alexandria University
- Member of ROTARACT MARIOT club (2004-2007)