Ming Qu

School of Civil Engineering
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EDUCATION

2002 – 2008 **Ph.D.** in the Center for Building Performance and Diagnostics, Carnegie Mellon University (Major areas: Architecture, Mechanical Engineering)

Thesis: **Model-based Design and Operation of Advanced Solar Cooling and Heating System,** Using mathematical model, system simulations, and experiments, this thesis investigates the technical and economic aspects of using high-temperature solar thermal receivers driving a two-stage absorption chiller to cool and heat a building space. Completion: December 2007

Committee Dr. Volker Hartkopf (Director, Center for Building Performance & Diagnostics)
Dr. David H. Archer (Member of the National Academy of Engineering; Mechanical Engineering)
Dr. Khee Poh Lam (School of Architecture)

1991 – 1995 B. E. in Civil Engineering, DaLian University of Technology, P. R. China

PERSONAL HIGHLIGHTS

- Expertise in **solar cooling and heating system**
- Professional knowledge and experience in **structural design** of industrial and residential buildings
- Talented in organizing and coordinating general **construction management**.
- Excellent knowledge and experience in design, modeling, analyses, and operation of **advanced HVAC systems**
- Outstanding knowledge of advanced building systems, especially expertise in **energy efficiency and sustainable building design**

PROFESSIONAL EXPERIENCE

2008 - present **Assistant Professor,** School of Civil Engineering, Purdue University

1995 – 2000 **Structural Engineer**, Beijing Design Institute, SINOPEC, Beijing, P.R.China

Structural Designer

- Industrial and Residential Buildings - Reinforced Concrete Structures; Masonry Structures
  - Headquarter building, 4500m^2 Reinforced Concrete Structure, *DaQing Oil Refinery Co.*, Dec. 1996
  - Central Control and Transformer Station, 1200 m^2 Reinforced Concrete Frame with Steel Truss, *LanZhou Oil Refinery Co.*, July 1998

- Air Compressor Plant, 720m² Reinforced Concrete Structure with Vibrating Equipment Foundation, *NingXia Oil Refinery Co.*, Nov. 1999

- Industrial Steel Structures
  - Steel Frames and Operating Decks for Oil Refining Reactors, 35 meters high, *TaLiMu Oil Refinery Co.*, Nov. 1998
  - Steel Watchtower, 30 meters high, *FuJian Oil Refinery Co.,* Dec. 1997
- Industrial Underground Reinforced Concrete Structures
  - Underground Gray Water-processing Pool, 1000 m³, *CangZhou Oil Refinery Co.,* 1997
  - Foundations of Huge Oil Storage Tanks and Foundation of Air Compressors, *FuJian Oil Refinery*, Nov.1995

On- Site Engineering Supervisor

- General Engineering Supervisor, LanZhou Oil Refinery, 4 months
- Structural Engineering Coordinator, RenQiu Oil Refinery, 6 months

RESEARCH EXPERIENCE

2003 – 2008 **Primary Researcher**, Solar Absorption Cooling and Heating System for the Intelligent Workplace (IW) , CMU

- Preliminary System Design
- Construction Inspection
- Planning, Execution, and Analysis of Test Programs
- Model-based Performance Analyses of Parabolic Trough Solar Collector and Overall Solar Cooling and Heating System

2004 – 2008 **Research Member**, DE-FC26-06NT42798, Advanced Building Efficiency Test Bed, supported by DOE, on natural ventilation of buildings, passive cooling, use of solar, bio-fuels, and large energy distribution networks, building designs to reduce energy use, and integration of energy-efficient measures with indoor environment and occupancy considerations.

2002 – 2008 **Research Member**, Building Investment Decision Support (BIDS™) Cost-Benefit Tool for Promoting High-Performance Sustainable Commercial Buildings and Productive Organizations, CMU

2002 – 2008 **Web-site Designer**, BIDS™ tool (http://cbpd.arc.cmu.edu/bids);
e-BIDS (http://cbpd.arc.cmu.edu/ebids);
National Advanced Building Test Bed Initiative (http://cbpd.arc.cmu.edu/testbed);
Guidelines for Building Performance (http://cbpd.arc.cmu.edu:8080/guidelines);
(If required, Username ; Password : ming)

TEACHING EXPERIENCE

Fall 2008 **Teacher**
Course , School of Civil Engineering, Purdue University

Spring 2003 **Teaching Assistant**
Spring 2004 Course 48 - 217 "Structure (I), " School of Architecture, CMU

Fall 2003 Fall 2004	**Teaching Assistant** Course 48 - 310 "Structure (II), " School of Architecture, CMU
Fall 2006	**Invited Lecturer**: Course 48 – 729 "Productivity, Health, Quality of Buildings," School of Architecture, CMU
Spring 2003 Spring 2004	**Teaching Assistant** Course 48 - 217 "Structure (I), " School of Architecture, CMU
Fall 2006 Fall 2007	**Invited Lecturer**: Solar Absorption Cooling and Heating System in the IW, Course 48 – 722 "Building Performance Modeling, " School of Architecture, CMU
Spring2007	**Invited Lecturer**: Sensors and Control Systems, Course 48 – 721 "Building Controls and Diagnostics, " School of Architecture, CMU

RECENT PUBLICATIONS

2008	"Experiment based performance analysis of a solar absorption cooling and heating system in Carnegie Mellon University," Ming Qu, D.H. Archer, Hongxi Yin, *ASME Proceedings of Energy Sustainability 2008, Jacksonville, Florida*
2008	"The Heat Transfer Characteristics of a 16 kW Steam Driven Double Effect Absorption Chiller," Hongxi Yin, Ming Qu, D.H.Archer, *ASME Proceedings of Energy Sustainability 2008, Jacksonville, Florida*
2007	"Solar Absorption Cooling and Heating System in the Intelligent Workplace, " Ming Qu, D.H. Archer, Hongxi Yin, Sophie Masson, ASME *Proceedings of Energy Sustainability 2007*, Long Beach, California
2007	"A Linear Parabolic Trough Solar Collector Performance Model, " Ming Qu, D.H. Archer, Hongxi Yin, ASME *Proceedings of Energy Sustainability 2007*, Long Beach, California
2007	"Performance Modeling of a Solar Thermal System for Cooling and Heating in Carnegie Mellon University's Intelligent Workplace, "Sophie Masson, Ming Qu, D.H. Archer, ASME *Proceedings of Energy Sustainability 2007*, Long Beach, California

HONORS AND AWARDS

2002 – 2008	Fellowship with Tuition Waiver, CMU
1991 – 1995	Outstanding Academic Fellowship, DaLian University of Technology, P.R.China
1991	National High School Mathematics Competition, 3rd Prize, P. R. China