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## **PROFESSIONAL PROFILE**

Chemical engineer with extensive experience in bulk solids handling and processing, including drying, fluidizing, feeding, dispersing, conveying, storage, extrusion, reacting, blending, granulating, testing, and mixing with fluids. Expert on handling and processing challenging materials such as carbon black and fumed silica. Professional experience includes manufacturing, research and development, consulting, and training. Spray drying knowledge includes bench, laboratory, pilot, and commercial equipment. Author of subsection on powder flow and hopper and chute design in Perry's Chemical Engineers' Handbook, 9<sup>th</sup> edition. Registered Professional Engineer.

## **QUALIFICATION SUMMARY**

### Powder handling and processing

- Developed new surge tank design for feeding fluffy carbon black into pelletizing equipment; steady, uninterrupted discharge improved pellet quality and reduced dust levels.
- Designed innovative moving bed reactors, heaters, and dryers for processing powders.
- Designed, fabricated, and installed moving bed conditioner for removing static charge from fumed metal oxides.
- Optimized flow properties of pharmaceutical formulations.
- Optimized wet granulation process to produce high-strength agglomerates.
- Determined causes of caking of pharmaceutical and food powders and provided remedies.

### Process development

- Designed moving bed induction heater process for manufacturing highly conductive grades of carbon black.
- Designed, fabricated, and installed moving bed conditioner for preventing accumulation of static charge when handling fumed metal oxides.
- Improved method for introducing activated carbon in extrusion process.
- Scaled-up spray dryer based process for attaching polymers onto inkjet pigments, key accomplishment in the launch of new products for printing companies.
- Developed and implemented continuous granulation process at contract manufacturing organization (CMO).
- Designed and implemented pilot plant process for surface modification of fine particles.
- Reduced the cost of spray drying at toll manufacturer by stretching capacity of existing process equipment.
- Evaluated and installed in-line and batch emulsifying equipment.

### Project management

- As project engineer, managed testing programs and designed or recommended equipment for storage, handling, and processing of bulk solids.
- Successfully completed solids handling projects for the chemicals, pharmaceutical, plastics, biotechnology, food, and energy industries.
- Executed research and development activities through stage-gate process.
- Evaluated CMO options and managed projects at selected organizations.

### Spray drying

- Managed pilot plant for scaling up spray drying processes for isolating emulsified solids.
- Established operating conditions for Buchi, GEA/Niro, and Roberts Box spray dryers with evaporative capacities ranging from 1 – 1,000 kg/hr.
- Developed novel method for improving flowability of spray-dried powders.
- Created Visual Basic-interfaced spreadsheet for establishing operating conditions of spray dryers.

### Materials science

- Established testing laboratory for measuring fundamental flow properties of bulk solids.
- Evaluated and authored operating procedures for Schulze, Peschl, Brookfield, and Freeman shear cell testers.
- Fabricated bulk solids permeability and wall friction testers.
- Interpreted inverse gas chromatography (surface energy) and sorption test results.

## PROFESSIONAL EXPERIENCE

### JENIKE & JOHANSON, INC., TYNGSBORO, MASSACHUSETTS

*Jenike & Johanson is a material testing and engineering consulting company that specializes in the storage, handling, and processing of bulk solids.*

- Senior Project Engineer, 2014 – 2017
- Project Engineer, 2006 – 2011

### CABOT CORPORATION, BILLERICA, MASSACHUSETTS

*Cabot is a specialty chemical company that manufactures fine particles and inkjet colorants.*

- Lead Engineer, 2011 – 2014
- Senior Process Development Engineer, 1996 – 2006

### ROHM AND HAAS COMPANY, BRISTOL, PENNSYLVANIA

*Rohm and Haas is a specialty chemical company that produces acrylic monomers and polymers, ion exchange resins, and agricultural products. It is now wholly owned by the Dow Chemical Company.*

- Senior Process Development Engineer, 1992 – 1996
- Process Development Engineer, 1989 – 1992

### MASSACHUSETTS INSTITUTE OF TECHNOLOGY SCHOOL OF CHEMICAL ENGINEERING PRACTICE ALBANY STATION, ALBANY, NEW YORK, BOULDER, COLORADO, AND CAMBRIDGE, MASSACHUSETTS

*The MIT Practice School is a program in which chemical engineering graduate students work on projects at host companies (GE Silicones, Waterford, NY, GE plastics, Selkirk, NY, Syntex Chemicals, Boulder, CO) in lieu of a masters thesis.*

- Director and Assistant Professor, 1987 – 1989
- Assistant Director, 1986 – 1987

### UNIVERSITY OF RHODE ISLAND DEPARTMENT OF CHEMICAL ENGINEERING, KINGSTON, RHODE ISLAND

- Adjunct Professor, 2012 – 2017

## PROFESSIONAL AFFILIATIONS

- American Institute of Chemical Engineers, Senior Member; past Chair, Boston local section; past Executive Committee Member, Particle Technology Forum
- Institute for Briquetting and Agglomeration, Member
- Licensed Professional Engineer, Massachusetts

## EDUCATION

- Ph.D. (Chemical Engineering), University of Colorado
- M.Ch.E., University of Delaware
- B.S.Ch.E., University of Colorado, special honors

## SELECTED PUBLICATIONS

- Mehos, G. and J. Carson, "Bulk Solids Flow and Hopper Design", subsection in Perry's Chemical Engineers' Handbook, 9<sup>th</sup> edition (in press, to be published in 2018).
- Mehos, G., "Designing Hoppers, Bins, and Silos for Reliable Flow", *Chem. Engr. Progress*, 114, 4 (April 2018).
- Mehos, G. and S. McClory, "Gravimetric Feeders: The Achilles' Heel of Continuous Manufacturing", *Powder Bulk Solids*, 33, 4 (2018).
- Mehos, G. and C. Kozicki, "Choosing Agglomeration Processes", *Chem. Engr.*, 127, 8, 51 (October 2017).
- Mehos, G., M. Eggleston, T. Trautman, M. Freeman, N. Stevens-Murphy, "Using Fundamental Powder Properties to Optimize the Flowability of Formulations", *Tablets & Capsules*, 15, 7, 11 (October 2017).
- Mehos, G., "Prevent Caking of Bulk Solids", *Chem. Eng. Progress*, 112, 4 (April 2016).
- Mehos, G., and D. Morgan, "Hopper Design Principles", *Chem. Eng.*, 126, 1 (January 2016).
- Mehos, Gregory J., "Feed Considerations for Continuous Dryers", *Pharmaceutical Processing*, July/August 2014, pp. 24-25.
- Mehos, G., A. Borocho, and C. Wykoff, "Using an Air-Assisted Discharge Hopper to Eliminate Powder Flow Problems", *Powder Bulk Eng.*, 27, 11 (November 2013).
- Mehos, G. and C. Kozicki, "Improving the Flow of Powders by Agglomeration", presented at the 32<sup>nd</sup> biennial Institute of Briquetting and Agglomeration Conference, New Orleans, September 26, 2011 (*Winner of the Neal Rice Award for best paper and presentation*).
- Mehos, G. and J. Paternina, "Design Considerations for Bulk Solids Gravity Flow Processing Vessels", presented at ChemInnovations, Houston, September 13, 2011.
- Mehos, G., "Designing Dust Collectors", *Chem. Eng. Progress*, 107, 9 (2011).
- Mehos, G. and C. Kozicki, "Consider Wet Agglomeration to Improve Powder Flow", *Chem. Eng.*, 121, 11 (January 2011).
- Hartford, C., G. Mehos, and S. Clement, "Caking Problems in Candy Manufacturing", *Manuf. Confect.*, 90, 12, 77 (December 2010).
- Mehos, G. and E. Maynard, "Handle Bulk Solids Safely and Effectively", *Chem. Eng. Progress*, 105, 9, 38 (September 2009).
- Mehos, G., "Designing and Operating Gravity Dryers", *Chem. Eng.*, 116, 5, 34 (May 2009).
- Mehos, G., "Modifying Your Storage Vessel for Trouble-Free Continuous Purging or Conditioning – Part 1", *Powd. Bulk Eng.*, 22, (November 2008).
- Mehos, G., "Modifying Your Storage Vessel for Trouble-free Continuous Purging or Conditioning –Part 2", *Powd. Bulk Eng.*, 22, 13 (December 2008).
- Jacobs, K. and G. Mehos, "The Importance of Using Limiting Flow Rates to Assess the Flowability of Pharmaceuticals, Excipients and Their Mixtures", presented at AIChE 2008 Annual Meeting, Philadelphia, PA, November 17, 2009.
- Mehos, G. and S. Clement, "Prevent Caking and Unwanted Agglomeration", *Chem. Eng.*, 115, 8, 55 (August 2008).
- Ennis, B. and G. Mehos, "Characterizing the Impact of Flow Aids on the Flowability of Pharmaceutical Excipients by Automated Shear Cell", presented at AAPS 2004 Annual Meeting, Baltimore, MD, November 10, 2004.
- Wang, M.-J., Y. Kutsovsky, P. Zhang, G. Mehos, L. Murphy, and K. Mahmud, "Effect of Functionalization of Carbon Black on Rubber Properties", presented at "Functional Tire Fillers 2001", Fort Lauderdale, Florida, January 29-31, 2001.

## PATENTS

- Mahmud, K., J. Belmont, James A, Y. Kutsovsky, W. Devonport, M. Wang, C. Galloway, and G. Mehos, "Polymers Containing Modified Pigments and Methods of Preparing the Same", U.S. Patent No. 6534569 (April 13, 2003).
- Mehos, G. and H. Tu, "Methods for Preparing Silica-coated Carbon Products", U.S. Patent No. 6541113 (April 1, 2003).

## REFERENCES

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