

CURRICULUM VITAE
STEPHEN W. HOAG

PERSONAL DATA

Business Address:

School of Pharmacy
University of Maryland at Baltimore
20 N. Pine St.
Baltimore, MD 21201

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EDUCATION

Ph.D. in Pharmaceutics (August 1990)
University of Minnesota-Twin Cities
Advisor: Edward G. Rippie, Ph.D.
Major: Pharmaceutics

Bachelor of Science (May 1982)
University of Wisconsin-Madison
Major: Biochemistry

EXPERIENCE

- 4/95-Present **Professor - School of Pharmacy, University of Maryland - Baltimore**
Research areas include (1) sustained release tablet formulation, dissolution testing, mathematical modeling of tablet compaction, design of tablet machine instrumentation, PC-based data acquisition systems, computer-aided manufacture and formulation, testing of nutritional supplements and PAT. (2) Use of mass transport theories to mathematically model calcium alginate gel formation and diffusion of bioactive molecules from alginate gels. (3) Prenatal vitamin formulation. (4) Thermal analysis of polymers used in film coating. (Promoted to Associate July 1, 2001, Full July 1, 2009)
- 9/08 - Present **Director - University of Maryland, School of Pharmacy GMP Facility**
The facility's mission is to provide services such as the design of dosage forms and the production of clinical supplies for small scale Phase I studies needed by academic clinicians and small companies who are performing translational research. Duties include providing scientific oversight, managing day-to-day operations of facility, head of quality assurance and writing regulator documents such as the CMC sections of INDs. Provide development guidance to take ideas from academic clinicians and small companies to the next stage.
- 5/95 - 6/97 **Full Graduate Faculty - Department of Physics, Oregon State University**
Doctoral thesis advisor for Shawna K. Inoue a Ph.D. in physics at OSU. She used mass transport theories to mathematically model calcium alginate gel formation and diffusion of bioactive molecules from alginate gels.
- 9/90 - 4/95 **Assistant Professor - College of Pharmacy, Oregon State University**

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Research areas included sustained release tablet formulation, fluid-bed coating, dissolution testing, mathematical modeling of tablet compaction, design of tablet press instrumentation, PC-based data acquisition systems, and computer-aided manufacture.

- 9/94 - 12/94 **Visiting Professor - Solids Group, Abbott Laboratories, North Chicago, IL**
Worked on the formulation of a sustained release fluoroquinolone; did wet and dry granulation of waxy materials in GMP facilities and studied the interrelationships between drug solubility, manufacturing conditions, HLB of waxy materials, and drug release rate. Assisted in the development of a semisolid formulation for an HIV protease inhibitor.
- 11/92 - 12/92 **Visiting Professor - Aerosol Group, 3M Pharmaceuticals, St. Paul, Minnesota**
Conducted a study to investigate the relationship between Kauri-Butanol numbers, solubility parameters, elastomer swelling, and elastomer leak rate for alternative HFC propellants.
- 5/90 - 9/90
Formulated and tested aerosols, worked with cold and pressure filling equipment. Tested particle size using cascade impactor, laser light scattering, and optical microscopy. Used Kauri-Butanol test to investigate the solvent power of alternative propellants (HFC's) and cosolvent blends.
- 1/86 - 5/90 **Research Assistant - Department of Pharmaceutics, University of Minnesota**
Ph.D. Thesis title: "Physics of Tablet Compaction: Viscoelastic and Thermodynamic Analysis of Internal Tablet Structure." Instrumented a rotary tablet machine and set up a computer data acquisition system. Programmed in BASIC, Pascal, FORTRAN and C.
- 9/87 - 12/87 **Teaching Assistant - Department of Pharmaceutics, University of Minnesota**
Full responsibility for the teaching of Pharmaceutical Calculations, Phar 5603.
- 9/83 - 1/86 **Research Assistant - Department of Pharmaceutics, University of Minnesota and the World Health Organization**
Conducted preformulation studies of the different polymorphs and the transitions between polymorphic forms of steroid crystals for use in long-acting contraceptives. Formulated aqueous microcrystalline steroid suspensions, and did quality control analysis of particle size using a Coulter Counter. Characterization of the physical properties of steroids using IR, powder X-ray diffraction, SEM, photo-optical microscopy, DSC, Coulter Counter, dissolution rate, and solubility in isoctane.
- 10/82 - 6/83 **Teaching Assistant - Department of Pharmaceutics, University of Minnesota**
Gave lectures in physical pharmacy and worked in teaching laboratories.
- 4/81 - 9/82 **Lab Technician - Department of Bacteriology, University of Wisconsin**
Characterized polygalacturonic acid hydrolase enzyme kinetics from the thermophilic anaerobe *Clostridium thermosulfurogenes*. Found culture conditions that optimized consistent cell growth and enzyme production in large anaerobic fermenters and chemostats.

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Summers 80 - 81 **Lab Technician - Department of Meat and Animal Science, University of Wisconsin** Assisted in a study that tested a new low-temperature method of making summer sausage. Analyzed meat samples for nitrite, percent protein, fat, pH, moisture, and ash content.

PROFESSIONAL ACTIVITIES & ASSOCIATIONS

Elected USP Council of Experts for 2015 to 2020
Elected USP Council of Experts for 2010 to 2015
Elected USP Council of Experts for 2005 to 2010
Elected USP Council of Experts for 2000 to 2005
Editorial Board for APhA Handbook of Pharmaceutical Excipients
Editorial Advisory Board for the journal of *Pharmaceutical Development and Technology*
Member of NIPTE (National Institute of Pharmaceutical Technology and Education) Executive Committee (2005 – present) Elected Chair of Executive Committee (2013-2015)
Appointed to FDA Pharmacy Compounding Advisory Committee (2014-present)

Manuscript reviewer: *Drug Development and Industrial Pharmacy*
International Journal of Pharmaceutics
Journal Pharmaceutical Sciences
Pharmaceutical Development and Technology
Pharmaceutical Research
PharmSciTech

Reviewed grants for Natural Sciences and Engineering Research Council of Canada (NSERC: Canadian version of NSF) January 1993

Member of:
American Association of Pharmaceutical Sciences
American Association for the Advancement of Science
American Chemical Society
American Institute of Chemical Engineers
Controlled Release Society
Society for Applied Spectroscopy

HONORS AND FELLOWSHIPS

2012 USP Award for an Outstanding Contribution to the Standards-setting Process
Ralph Shangraw Memorial Award 2011
Outstanding Contributed Paper Award, Regulatory Science Section. Pharmaceutical Sciences World Congress (PSWC) /AAPS Annual Meeting held in New Orleans LA, 2010
Elected AAPS Fellow 2009
Elected AACP Delegate 2001-2002
Eli Lilly Young Investigator Award 1993 -1994
Rho Chi Honor Society (March 1987)

T. H. Rowell Graduate Fellowship (1987-88)
T. H. Rowell Graduate Fellowship (1983-84)
Melendy Graduate Fellowship (Summer 1983)
Deans Honor List, University of Wisconsin, Four Semesters

PUBLICATIONS

Boyce Heather, Vivek Dave, Myke Scoggins, Vadim Gurvich, Daniel Smith, Stephen Byrn and Stephen Hoag, “Physical Barrier Type Abuse-Deterrent Formulations: Mechanistic Understanding of Sintering-Induced Microstructural Changes in Polyethylene Oxide Placebo Tablets”, submitted *PharmSciTech*, (2019).

Moshe Honick, Kanika Sarpal, Alaadin Alayoubi, Ahmed Zidan, Stephen W. Hoag, Robert G. Hollenbeck, Eric J. Munson, and James E. Polli, “Utility of Films to Anticipate Properties of Amorphous Spray Dried Dispersions”, submitted *PharmSciTech*, (2019).

Ting Wang, Ahmed Ibrahim, and Stephen W. Hoag, “Understanding the Impact of Magnesium Stearate Variability on Tableting Performance Using a Multivariate Modeling Approach” *Pharm. Dev. Tech.* submitted (2019)

Bowen Jiang, Amita Jain, Yuwei Lu and Stephen W. Hoag, “Probing Thermal Stability of Proteins with Temperature Scanning Viscometer”, *Mol. Pharm.*, **16**(8):3687-3693 (2019). DOI: 10.1021/acs.molpharmaceut.9b00598

Annabelle M. Belcher, Thomas O. Cole, Aaron D. Greenblatt, Stephen W. Hoag, David H. Epstein, Michael Wagner, Amy S. Billing, Ebonie Massey, Kristen R. Hamilton, Zofia Kozak, Christopher J. Welsh, Eric Weintraub, Emerson M. Wickwire, Eric D. Wish, Ted J. Kaptchuk, Luana Colloca, “Open-Label Dose-Extending Placebos For Opioid Use Disorder: A protocol for a randomized controlled clinical trial with methadone treatment”, in press *BMJ*, (2019).

Ahmed Ibrahim, Bhaveshkumar H. Kothari, Raafat M. Fahmy and Stephen W. Hoag, “Prediction of Dissolution of Sustained Release Coated Ciprofloxacin beads by near-infrared spectroscopy and Process Parameters: A data Fusion Approach”, *AAPS PharmSciTech*, **20**(6):222 (2019). Invited Manuscript for Theme: Advances in PAT, QbD, and Material Characterization, DOI: <https://doi.org/10.1208/s12249-019-1401-4>

Andres Bejarano, Chandima Hewa Nadungodage, Fang Wang, Ann Christine Catlin, Stephen W. Hoag, “Decision Support for Excipient Risk Assessment in Pharmaceutical Manufacturing”, *AAPS PharmSciTech*, **20**(6):233 (2019). Invited Manuscript for Theme issue Team Science and Education for Pharmaceuticals: the NIPTE Model, DOI: <https://doi.org/10.1208/s12249-019-1440-x>

Ting Wang, Alan Potts, and Stephen W. Hoag, “Elucidating the Variability of Magnesium Stearate and the Correlations with Their Spectroscopic Features”, *J. Pharm Sci.*, 108(4):1569-1580 (2019). DOI: <https://doi.org/10.1016/j.xphs.2018.11.041>

Xiaochi Xu; Chaitanya Krishna P Vallabh; Stephen W Hoag; Vivek S Dave and Cetin Cetinkaya, "Early Detection of Capping Risk in Solid Dosage Forms with an Acoustic Technique", *Int. J. Pharm.*, **553**(1-2):338-348 (2018). DOI: <https://doi.org/10.1016/j.ijpharm.2018.10.052>

Bowen Jiang, Ahmed Ibrahim, Russell Martin, Corinne Keet, Hai-Quan Mao, Stephen W. Hoag, "Development and validation of a HPLC with fluorescence detection method to quantify the peanut allergen Ara h 2 in peanut extract and sublingual films", *Separation Science Plus*, **1**(9):579-587 (2018). DOI: <https://doi.org/10.1002/sscp.201800068>

Heather J. Boyce, Ahmed Ibrahim and Stephen W. Hoag, "Physical barrier type abuse-deterrent formulations: monitoring sintering-induced microstructural changes in polyethylene oxide placebo tablets by near infrared spectroscopy (NIRS)", *Drug Dev. Ind. Pharm.*, **14**(11):1885-1894 (2018). DOI: <https://doi.org/10.1080/03639045.2018.1504965>

Bhaveshkumar H. Kothari, Raafat M. Fahmy, Gregg Claycamp, Christine M. V. Moore, Sharmista Chatterjee and Stephen W. Hoag, "Comparing a Statistical Model and Bayesian Approach to Establish the Design Space for the Coating of Ciprofloxacin HCl Beads at Different Scales of Production", *AAPS PharmSciTech*, **19**(8):3809-3828 (2018). DOI: <https://doi.org/10.1208/s12249-018-1116-y>

Tanvi M. Deshpande, Anisul Quadir, Sakae Obara and Stephen W. Hoag, "Impact of Formulation Excipients on the Thermal, Mechanical, and Electrokinetic Properties of Hydroxypropyl methylcellulose acetate succinate (HPMCAS)", *Int. J. Pharm.*, **542**(1-2):132-141 (2018). DOI: <https://doi.org/10.1016/j.ijpharm.2018.02.024>

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Tanvi M. Deshpande, Helen Shi, John Pietryka, Stephen W. Hoag, Ales Medek, "Investigation of Polymer/Surfactant Interactions and Their Impact on Itraconazole Solubility and Precipitation Kinetics for Developing Spray-Dried Amorphous Solid Dispersions", *Molecular Pharmaceutics*, **15**(3):962-974 (2018). DOI: [10.1021/acs.molpharmaceut.7b00902](https://doi.org/10.1021/acs.molpharmaceut.7b00902)

Heather Boyce, Dan Smith, Steve Byrn, Bhawana Saluja, Wen Qu, Vadim J. Gurvich and Stephen Hoag, "A Vertical diffusion cell for the in vitro assessment of comminuted abuse deterrent formulations prepared for nasal insufflation", *PharmSciTech*, **19**(4):1744-1757 (2018). DOI: <https://doi.org/10.1208/s12249-017-0947-2>

Bowen Jiang, Hua Yu, Yongrong Zhang, Hanping Feng and Stephen Hoag, "A Multiparticulate Delivery System for Potential Colonic Targeting Using Bovine Serum Albumin as a Model Protein", *Pharm Res*, **34**(12):2663-2674 (2017) **Invited manuscript**. DOI: <https://doi.org/10.1007/s11095-017-2237-9>

Marilyn Martinez, Bipin Mistry, Viera Lukacova, Kimberley Lintz, James E. Polli, Stephen W. Hoag, Dowling Thomas, Ravikanth Kona and, Raafat M Fahmy, "Exploring Canine-Human

Differences in Product Performance. Part II: Use of Modeling and Simulation to Explore the Impact of Formulation on Ciprofloxacin In Vivo Absorption and Dissolution in Dogs”, *AAPS Journal*, **19**(3):712-726 (2017). DOI: <https://doi.org/10.1208/s12248-017-0055-y>

Bhaveshkumar H. Kothari, Raafat M. Fahmy, Gregg Claycamp, Christine M. V. Moore, Sharmista Chatterjee and Stephen W. Hoag, “A Systematic Approach of Employing Quality by Design Principles: Risk Assessment and Design of Experiments to Demonstrate Process Understanding and Identify the Critical Process Parameters for Coating of the Ethylcellulose Pseudolatex Dispersion Using Non-Conventional Fluid Bed Process”, *AAPS PhamSciTech*, **18**(4):1135-1157 (2017). DOI: [10.1208/s12249-016-0569-0](https://doi.org/10.1208/s12249-016-0569-0)

Vivek S. Dave, Michael Popielarczyk, Heather Boyce, Antoine Al-Achi, Enyioha Ike-Amaechi, Stephen W. Hoag and Rahul V. Haware, “Lubricant-Sensitivity Assessment of SPRESS® B820 by Near Infrared Spectroscopy: A Comparison of Multivariate Methods”, *J. Pharm Sci.*, **106**(2):537-545 (2017). DOI: <http://dx.doi.org/10.1016/j.xphs.2016.09.018>

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Soundarya Vaithianathan, Sam H. Haidar, Xinyuan Zhang, Wenlei Jiang, Christopher Avon, Thomas C. Dowling, Changxing Shao, Maureen Kane, Stephen W. Hoag, Mark H. Flasar, Tricia Y. Ting and James E. Polli, “Reply to "On the Effect of Common Excipients on the Oral Absorption of Class 3 Drugs".”, *J. Pharm Sci.*, **105**(4):1355-1357 (2016). DOI: [10.1016/j.xphs.2016.02.028](https://doi.org/10.1016/j.xphs.2016.02.028)

Soundarya Vaithianathan, Sam H. Haidar, Xinyuan Zhang, Wenlei Jiang, Christopher Avon, Thomas C. Dowling, Changxing Shao, Maureen Kane, Stephen W. Hoag, Mark H. Flasar, Tricia Y. Ting and James E. Polli, “Effect of Common Excipients on the Oral Drug Absorption of Biopharmaceutics Classification System Class 3 Drugs Cimetidine and Acyclovir”, *J. Pharm Sci.*, **105**(2):996-1005 (2016). DOI: [10.1002/jps.24643](https://doi.org/10.1002/jps.24643)

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Ciprofloxacin”, *AAPS Journal*, **18**(4):886-97 (2016). doi: 10.1208/s12248-016-9913-2. Erratum in: *AAPS J.* (2016) Nov;**18**(6):1584.

H. Gregg Claycamp, Raafat Fahmy, Ravi Kona, Stephen W. Hoag, “Quality-by-Design II: Application of Quantitative Risk Analysis to the Formulation of Ciprofloxacin Tablets”, *AAPS PharmSciTech.*,**17**(2):233-44 (2016). DOI: 10.1208/s12249-015-0349-2

Vikas Moolchandani, Larry L. Augsburger, Abhay Gupta, Mansoor Khan, John Langridge, and Stephen W. Hoag, “To investigate the influence of machine operating variables on formulations derived from lactose types in capsule filling: Part 2”, *Drug Dev. Ind.*,**42**(4):624-35 (2016). DOI: 10.3109/03639045.2015.1062511

Ting Wang, Ahmed Ibrahim, Alan Potts, and Stephen W. Hoag, “Application of Multivariate Strategies to Classification of Pharmaceutical Excipient Manufacturers Based on Near-Infrared (NIR) Spectra”, *Applied Spectroscopy*, **69**(11):1257-1270 (2015). DOI: 10.1366/15-07859

AP Weerts, N Pattyn, L Putcha, SW Hoag, A Van Ombergen, E Hallgren, PH Van de Heyning, FL Wuyts, “Restricted sedation and absence of cognitive impairments after administration of intranasal scopolamine”, *J Psychopharmacol.*, **29**(12):1231-5 (2015). DOI: 10.1177/0269881115598414

Vikas Moolchandani, Larry L. Augsburger, Abhay Gupta, Mansoor Khan, John Langridge, and Stephen W. Hoag, “Characterization and selection of suitable grades of lactose as functional fillers for capsule filling: part 1”, *Drug Dev. Ind. Pharm.*, **41**(9):1452-63 (2015). DOI: 10.3109/03639045.2014.957703

Aurélie P. Weerts, Lakshmi Putcha, Stephen W. Hoag, Emma Hallgren, Angelique Van Ombergen, Paul H. Van de Heyning, Floris L. Wuyts, “Intranasal scopolamine affects the semicircular canals centrally and peripherally”, *J. Appl. Physiol.*, **119**(3):213-218 (2015). DOI: 10.1152/jappphysiol.00149.2015

Harris Howland, Raafat M. Fahmy and Stephen W. Hoag, “Analysis of Curing of a Sustained Release Coating Formulation by Application of NIR Spectroscopy to Monitor Changes Associated with Glyceryl Monostearate”, *Drug Dev. Ind. Pharm.*, **41**(8):1263-1273 (2015). DOI: 10.3109/03639045.2014.947505

Vivek S. Dave, Raafat M. Fahmy and Stephen W. Hoag, “Near-infrared spectroscopic analysis of the breaking force of extended-release matrix tablets prepared by roller-compactation: influence of plasticizer levels and sintering temperature”, *Drug Dev. Ind. Pharm.*, **41**(6):898-905 (2015). DOI: 10.3109/03639045.2014.911883

Ravikanth Kona, Raafat M. Fahmy, Gregg Claycamp, James E. Polli, Marilyn Martinez, Stephen W. Hoag, “Quality-by-Design III: Application of Near-Infrared Spectroscopy to monitor roller compactation in-process and product quality attributes in formulation development of immediate release tablets”, *AAPS PharmSciTech*, **16**(1):202-16 (2015) DOI: 10.1208/s12249-014-0180-1.

Ting Wang, Stephen W. Hoag, James Polli, Maria Lin Eng and Neha Umesh Sheth, "Quality of antiretroviral (ARV) and opportunistic infections medications dispensed from developing countries and internet pharmacies", *J. Clin. Pharm. Ther.*, **40**(1):68-75 (2014). DOI: 10.1111/jcpt.12226

Ikoni Ogaji and Stephen Hoag, "Novel extraction and application of okra gum as a film coating agent using theophylline as a model drug", *J. Adv. Pharm. Tech. Res.*, **5**(2):70-77 (2014). DOI: 10.4103/2231-4040.133427

Qingqing (Maggie) Chen, Russell Martin, Stephen W. Hoag, Robert A. Wood, Hai-Quan Mao and Corinne Keet, "Formulation and Characterization of Orally Dissolving Thin Films Containing the German Cockroach *Blattella germanica* (Bla g 2) Allergen", *Int. J. Pharma Sci.*, **4**(5):730-35 (2014).

Lawrence X. Yu, Gregory Amidon, Mansoor A. Khan, Stephen W. Hoag, James Polli, G. K. Raju, and Janet Woodcock, "Understanding Pharmaceutical Quality by Design", *AAPS Journal*, **16**(4):771-783 (2014). DOI: 10.1208/s12248-014-9598-3

William C. Stanley, James W. Cox, Girma Asemu, Kelly A. O'Connell, Erinne R. Dabkowski, Wenhong Xu, Rogerio F. Ribeiro Jr, Kadambari C. Shekar, Stephen W. Hoag, Sharad Rastogi, Hani N. Sabbah, Caroline Daneault, Christine des Rosiers, "Evaluation of Docosahexaenoic Acid in a Dog Model of Hypertension Induced Left Ventricular Hypertrophy", *J. Cardiovasc. Transl. Res.*, **6**(6):1000-10 (2013). DOI: 10.1007/s12265-013-9511-y.

Hanpin Lim and Stephen W. Hoag, "Plasticizer effects on physical-mechanical properties of solvent cast Soluplus[®] films", *AAPS PharmSciTech*, **14**(3):903- 10 (2013). DOI: 10.1208/s12249-013-9971-z

Harris Howland and Stephen W. Hoag, "Analysis of Curing of a Sustained Release Coating Formulation by Application of NIR Spectroscopy to Monitor Changes Physical-Mechanical Properties", *Int. J. Pharm.*, **452**(1-2):82-91(2013) DOI: 10.1016/j.ijpharm.2013.04.035

Ravikanth Kona, Haibin Qu, Robert Mattes, Bela Jancsi, Raafat M. Fahmy, Stephen W. Hoag, "Application of in-line near infrared spectroscopy and multivariate batch modeling for process monitoring in fluid bed granulation, *Int. J. Pharm.*, **452**(1-2):63-72(2013). DOI: 10.1016/j.ijpharm.2013.04.039

Vivek S. Dave, Raafat M. Fahmy and Stephen W. Hoag, "Investigation of the physical-mechanical properties of Eudragit[®] RS PO / RL PO and their mixtures with common pharmaceutical excipients", *Drug Dev. Ind. Pharm.*, **39**(7):1113-25(2013), DOI: 10.3109/03639045.2012.714786

Raafat Fahmy, Ravikanth Kona, Ramesh Dandu, Walter Xie, Gregg Claycamp and Stephen W., Hoag, "Quality by Design I: Application of Failure Mode Effect Analysis (FMEA) and Plackett-Burman Design of Experiments in the Identification of "Main factors" in the Formulation and Process Design Space for Roller-Compacted Ciprofloxacin Hydrochloride Immediate-Release Tablets", *AAPS PharmSciTech*, **13**(4):1243-1254(2012). DOI: 10.1208/s12249-012-9844-x.

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variables on functional attributes of granules and tablets”, *Drug Dev. Ind. Pharm.*, **38**(10):1240-1253(2012), DOI:10.3109/03639045.2011.645831

Ikoni Joshua Ogaji and Stephen W. Hoag, “Effect of Grewia Gum as a Suspending Agent on Ibuprofen Pediatric Formulation” *PharmSciTech*, **10**(2):507-13(2011), DOI: 10.1208/s12249-011-9606-1

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Stuart Cantor, Stephen W. Hoag, Larry L. Augsburger, Christopher D. Ellison, Mansoor A. Khan and Robbe C. Lyon, “NIR Spectroscopy applications in the development of a compacted multiparticulate system for modified release” *PharmSciTech* (2011), DOI: 10.1208/s12249-010-9580-z

Adam A. Dinerman, Joseph Cappello, Mohamed El-Sayed, Stephen W. Hoag, Hamidreza Ghandehari, “Influence of Solute Charge and Hydrophobicity on Partitioning and Diffusion in a Genetically Engineered Silk-Elastin-Like Protein Polymer Hydrogel”, *Macromol. Biosci.*, **10**:1235-47 (2010) online DOI: 10.1002/mabi.201000061

Diane V. Doughty, Lei Diao, Stephen W. Hoag, and Richard N. Dalby, “Use of Flexible Weighted Nasal Spray Dip Tubes to Improve Product Performance”, *J Aerosol Med Pulm Drug Deliv.*, **22**(4):1-7 (2009) online DOI: 10.1089/jamp.2008.0727

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Pallavi Nithyanandan, Stephen W. Hoag, and Richard N. Dalby. "The Analysis and Prediction of Functional Robustness of Inhaler Devices" *J. Aerosol Med.* **20**(1): 19-37 (2007).

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NIPTE Research Conference, Shady Grove, MD, May 2015; Heather Boyce, Dan Smith, Steve Byrn, Bhawana Saluja, Wen Qu, Vadim J. Gurvich, Stephen W. Hoag; “Investigation of abuse deterrent properties of sintered polyethylene oxide and hypromellose placebo tablets” (2015)

NIPTE Research Conference, Shady Grove, MD, May 2015; Bowen Jiang, Ahmed Ibrahim, Lianfa Shi, Hanpeng Feng, Stephen Hoag; “Optimization of a small batch coating process in Huttlin fluid bed system by fractional factorial design”

NIPTE Research Conference, Shady Grove, MD, May 2015; Zhongqiang Lin, Rina Chokshi, Brian Carlin and Stephen W. Hoag; “Quantification of the Extent of Coalescence of Ethylcellulose Films using Permeability and Spectroscopic Methods”

NIPTE Research Conference, Shady Grove, MD, May 2015; Ahmed and Stephen W. Hoag; “Optimization of a small batch coating process”

AAPS Annual Meeting and Exposition, San Diego, CA, November 2014; Ahmed Abouzaid, Ahmed Ibrahim, Maissa Salem, Ahmed El Gendy and Stephen W. Hoag; “Simultaneous Determination of Sulfamethoxazole and Trimethoprim in Tablet Powder by Near Infrared Spectroscopy (NIRS) and PLS Regression: Comparison between Different Preprocessing Methods”
PharmSci: Available from: <http://www.pharmsci.org/journal> (2014)

AAPS Annual Meeting and Exposition, San Diego, CA, November 2014; Heather Boyce and Stephen Hoag; “Understanding the Effects of Chemometric Pre-processing Methods on Near-Infrared Spectra of Pharmaceutical Tablets That Exhibit Varied Physical-Mechanical Properties”
PharmSci: Available from: <http://www.pharmsci.org/journal> (2014)

AAPS Annual Meeting and Exposition, San Diego, CA, November 2014; Bowen Jiang, Ahmed Ibrahim, Lianfa Shi, Hanping Feng and Stephen Hoag; “ Optimization of a Small Batch Coating Process in Huttlin Fluid Bed System by Fractional Factorial Design” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2014)

AAPS Annual Meeting and Exposition, San Diego, CA, November 2014; Zhongqiang Lin, Rina Chokshi, Brian Carlin and Stephen Hoag; “Quantification of the Extent of Coalescence of Ethylcellulose Films Using Permeability and Spectroscopic Methods” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2014)

AAPS Annual Meeting and Exposition, San Diego, CA, November 2014; Tanvi Deshpande, Stephen Hoag, Anisul Quadir and Sakae Obara; “QbD Development of Coating Formulation and Identifying Processing Conditions for Coating Tablets with Hydroxypropyl Methylcellulose Acetate Succinate (HPMCAS)” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2014)

17th International Diffuse Reflectance Conference (IDRC), Chambersburg Meeting, Chambersburg PA, August 2014; Heather Boyce, Ahmed Ashour, Tanvi Deshpande and Stephen W. Hoag; “Quantification of polymer excipient concentration in commercial pharmaceutical drug products by diffuse reflectance near infrared spectroscopy”

17th International Diffuse Reflectance Conference (IDRC), Chambersburg Meeting, Chambersburg PA, August 2014; Zhongqiang Lin, Rina Chokshi, Brian Carlin and Stephen W. Hoag; “Quantification of the Extent of Coalescence of Ethylcellulose Films using Permeability and Spectroscopic Methods”

AAPS Annual Meeting and Exposition, San Antonio, TX, November 2013; Z. Lin, R. Chokshi, B. Carlin, R. Fahmy and S. Hoag. “The Quantification of the Extent of Curing of Ethylcellulose Films Using NIR Spectroscopy and Tensile Measurements” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2013)

AAPS Annual Meeting and Exposition, San Antonio, TX, November 2013; I. Ogaji and S. Hoag. “Aqueous Film Coating Potential of Okra Gum using Theophylline as the Model Drug” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2013)

AAPS Annual Meeting and Exposition, San Antonio, TX, November 2013; T. Wang, A. Ibrahim, A. Potts and S. Hoag. “Predicting Manufacturer of Excipient Using NIR Spectra and Multivariate Strategies” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2013)

AAPS Annual Meeting and Exposition, San Antonio, TX, November 2013; S. Hoag, X. Peng, Y. Zhao, A. Stinchcomb. “Real Time Detection of Cold Flow in Transdermal Systems (TDDS)” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2013)

AAPS Annual Meeting and Exposition, San Antonio, TX, November 2013; H. Boyce, A. Ashour and S. Hoag. “Evaluation of a Portable NIR Analyzer as a Tool against Pharmaceutical Drug Counterfeiting” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2013)

AAPS Annual Meeting and Exposition, San Antonio, TX, November 2013; B. Kothari, R. Fahmy, C. Moore, S. Chatterjee and S. Hoag. “Effect of Curing Conditions on the Stability of the Ciprofloxacin HCl Coated Beads” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2013)

AAPS Annual Meeting and Exposition, San Antonio, TX, November 2013; A. Ibrahim, B. Kothari, R. Fahmy and S. Hoag. "Prediction of Dissolution of Controlled Release Multiparticulate Beads Using Near-Infrared Spectroscopy and Process Parameters: A Data Fusion Approach" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2013)

AAPS Annual Meeting and Exposition, San Antonio, TX, November 2013; B. Kothari, A. Ashour, R. Fahmy and S. Hoag. "Application of Near Infrared Spectroscopy to Develop Process Efficiency Model for a Multiparticulate Coating System" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2013)

AAPS Annual Meeting and Exposition, San Antonio, TX, November 2013; B. Kothari, A. Ashour, R. Fahmy and S. Hoag. "Use of Near Infrared Spectroscopy Method to Monitor Extent of Curing of Coated Multiparticulates as Part of In-Process Control Strategy" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2013)

AAPS Annual Meeting and Exposition, San Antonio, TX, November 2013; B. Kothari, A. Ashour, R. Fahmy and S. Hoag. "Development of Loss on Drying Model Using Near Infrared Spectroscopy as In-Process Control Strategy" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2013)

AAPS Annual Meeting and Exposition, San Antonio, TX, November 2013; B. Kothari, R. Fahmy, G. Claycamp, C. Moore, S. Chatterjee and S. Hoag. "Scale-Up of Ciprofloxacin HCl Multiparticulate Coated Beads from Mycrolab to Unilab Scale Using Fluid Bed Disk-Jet Technology" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2013)

AAPS Annual Meeting and Exposition, San Antonio, TX, November 2013; B. Kothari, R. Chokshi, R. Fahmy, G. Claycamp, C. Moore, S. Chatterjee and S. Hoag. "Utilization of Response Surface Methodology to Establish Design Space of the Critical Process Parameters for Non-conventional Disk-Jet Fluid Bed Coating Process" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2013)

SciX 2013 Annual Meeting, Milwaukee, WI, September 2013; Ting Wang, Ahmed I Ashour and Stephen W. Hoag; "Application of Spectroscopy and Multivariate Analysis to Classify Source and Type of Commonly Used Pharmaceutical Excipients"

Excipient Fest Americas, Baltimore, MD, April 2013; Ting Wang and Stephen W. Hoag; "Elucidating the Variability of Magnesium Stearate with Regards to Different Manufacturers, Grades and Lots and Correlations to Their Spectroscopic Features"

Excipient Fest Americas, Baltimore, MD, April 2013; Ting Wang, Ahmed I. Ashour and Stephen W. Hoag; "Application of Multivariate Analysis to Incorporate Raw Material Variability into Prediction Models for Its Performance"

Excipient Fest Americas, Baltimore, MD, April 2013; Ting Wang, Ahmed I. Ashour and Stephen W. Hoag; "Application of Multivariate Strategies to Classify Excipient Manufacturers Based on NIR Spectra"

Excipient Fest Americas, Baltimore, MD, April 2013; Xiujuan Peng, Yuxiang Zhao, Heather Boyce, Audra Stinchcomb and Stephen W. Hoag; “An Investigation of The Effect of Triacetin on Cold Flow Behavior in Transdermal Systems”

Excipient Fest Americas, Baltimore, MD, April 2013; Zhongqiang Lin, Haibin Qu, Bhavesh Kothari, Rina Chokshi, Brian Carlin, Rafaat Fahmy and Stephen W. Hoag; “Study of Physicomechanical Properties of Aqueous Ethylcellulose Dispersion Films During the Curing Process”

AAPS Annual Meeting and Exposition, Chicago, IL, October 2012; S. Hepburn, Z. Lin, J. Wang, R. Fahmy and S. Hoag. “Development and Validation of a Stability-indicating HPLC Method for the Estimation of L-tetrahydropalmatine in a Capsule Dosage Form” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2012)

AAPS Annual Meeting and Exposition, Chicago, IL, October 2012; S. Hepburn, B. Kothari, R. Fahmy and S. Hoag. “Use of QbD Approach to Develop and Validate a Simple, Sensitive HPLC Method Per ICH Q2A and Q2B Guidelines for the Analysis of Ciprofloxacin HCl Coated Multiparticulate Beads” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2012)

AAPS Annual Meeting and Exposition, Chicago, IL, October 2012; I. Ogaji, I. Okafor and S. Hoag. “Grewia Gum as an Aqueous Film Coating Agent: Some Physicochemical Properties of Theophylline Coated Tablets” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2012)

AAPS Annual Meeting and Exposition, Chicago, IL, October 2012; B. Kothari, B. Jancsik, R. Fahmy and S. Hoag “Effect of Humidity on the Coating Efficiency of Ciprofloxacin HCl Controlled Release Multiparticulate Beads” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2012)

AAPS Annual Meeting and Exposition, Chicago, IL, October 2012; Z. Lin, H. Qu, B. Kothari, R. Chokshi, B. Carlin, R. Fahmy and S. Hoag. “Study of Physicomechanical Properties of Aqueous Ethylcellulose Dispersion Films during the Curing Process” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2012)

AAPS Annual Meeting and Exposition, Chicago, IL, October 2012; A. Ashour, R. Fahmy and S. Hoag. “Effects of Preprocessing Methods In Near Infrared Spectral Data for PLS Modeling of Chemical and Physical Properties of Intact Pharmaceutical Tablets” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2012)

AAPS Annual Meeting and Exposition, Chicago, IL, October 2012; A. Ashour, B. Kothari, R. Fahmy, B. Carlin, R. Chokshi and S. Hoag. “Use of Near InfraRed Spectroscopy Methodology and Partial Least Squares-discriminate Analysis (PLS-DA) to Develop Classification Model between Uncured and Cured Coated Multiparticulate Beads” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2012)

AAPS Annual Meeting and Exposition, Chicago, IL, October 2012; T. Wang, A. Ashour and S. Hoag. "Application of Multivariate Analysis to Incorporate Raw Material Variability into Prediction Models for Its Performance" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2012)

AAPS Annual Meeting and Exposition, Chicago, IL, October 2012; T. Wang and S. Hoag. "Elucidating the Variability of Magnesium Stearate with Regards to Different Manufacturers, Grades and Lots and Correlations to their Spectroscopic Features" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2012)

AAPS Annual Meeting and Exposition, Chicago, IL, October 2012; B. Kothari, A. Ashour, R. Fahmy, C. Moore and S. Hoag. "Effect of Coating Processing Parameters on the Dissolution Profiles of Ciprofloxacin HCl Controlled Release Multiparticulate Beads" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2012)

AAPS Annual Meeting and Exposition, Chicago, IL, October 2012; B. Kothari, M. Knoell, K. Schoenboerner, N. Michel, R. Fahmy, G. Claycamp and S. Hoag. "Use of Design of Experiments to Identify Critical Process Parameters for the Manufacture of Controlled Release Ciprofloxacin HCl Multiparticulate Beads using a Non-conventional Fluid Bed Process" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2012)

AAPS Annual Meeting and Exposition, Washington, DC, October 2011; B. Kothari, B. Carlin, R. Chokshi, R. Fahmy and S. Hoag. "Application of fluorescence spectroscopy to determine curing end point in cast films of ethyl cellulose pseudolatices" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2011)

AAPS Annual Meeting and Exposition, Washington, DC, October 2011; R. Kona, R. Mattes, R. Fahmy and S. Hoag. "Real-time on-line monitoring system in a fluid bed to determine moisture levels and granulation end-point: Using near-infrared spectroscopy (NIR) and chemometrics" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2011)

AAPS Annual Meeting and Exposition, Washington, DC, October 2011; I. Ogaji, I. Okafor, S. Hoag. "Effect pH on the Viscosity of Grewia Gum" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2011)

AAPS Annual Meeting and Exposition, Washington, DC, October 2011; I. Ogaji, T. Wang, H. Lim, H. Howard, R. Kona, R. Dandu and S. Hoag. "Particle Size and Particle size Distribution of Potential Polymeric Pharmaceutical Excipient from Natural Sources" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2011)

AAPS Annual Meeting and Exposition, Washington, DC, October 2011; T. Wang, R. Fahmy and S. Hoag. "Comparison of Methods to Differentiate Co-processed Excipients from Physical Mixtures" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2011)

AAPS Annual Meeting and Exposition, Washington, DC, October 2011; L. Wu, T. Wang, B. Hahn and S. Hoag. "Mecamylamine Hydrochloride Stability Testing and Shelf Life Determination" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2011)

AAPS Annual Meeting and Exposition, Washington, DC, October 2011; S. Badin, N. Pandya, S. Hoag and A. Nan. "Synthesis and characterization of a hybrid alginate hydrogel-poly (DL-lactide-co-glycolide) (PLGA) nanoparticle system for the delivery of chemotherapeutics" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2011)

AAPS Annual Meeting and Exposition, Washington, DC, October 2011; B. Kothari, M. Knoell, K. Schoenboerner, N. Michel, R. Fahmy and S. Hoag. "The Production of Nanoparticle Delivery Systems Using Fluid Bed Spray Coating" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2011)

AAPS Annual Meeting and Exposition, Washington, DC, October 2011; H. Lim, R. Fahmy and S. Hoag. "Effect of plasticizer on the mechanical properties of Soluplus[®] solvent cast film" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2011)

AAPS Annual Meeting and Exposition, Washington, DC, October 2011; H. Lim, A. Yacykewych, Y. Lan, Y. Yao, R. Fahmy and S. Hoag. "Dissolution and Solubility Enhancement of Carbamazepine via Solvent Casting and Hot-melt Extrusion with a Novel Polymeric Solubilizer (Soluplus[®])" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2011)

ExcipientFest Americas, Baltimore, MD, May 2010, Ting Wang, Ann Christine Catlin, Sumudinie Fernando, Sudheera Fernando, Carl R. Wassgren, Kristine Alston, Prabir K. Basu, Linas Mockus, and Stephen W. Hoag, "Comparison of Different Flowability Tests for Pharmaceutical Excipients"

ExcipientFest Americas, Baltimore, MD, May 2010, Bhaveshkumar H. Kothari, Harris Howland, Stephen W. Hoag, "Curing End-Point Determination of Polymer Dispersions Cast Films Using Fluorescence Spectroscopy"

ExcipientFest Americas, Baltimore, MD, May 2010, Ravikanth Kona, Ramesh Dandu, Raafat M. Fahmy, James E. Polli, Stephen W. Hoag, "Hydroxypropyl cellulose (HPC) as dry binder in the formulation development of Ciprofloxacin hydrochloride immediate release tablets: Influence of binder source, lubricant type and their levels on the critical quality attributes (CQA's)"

ExcipientFest Americas, Baltimore, MD, May 2010, Hanpin Lim, Yidan Lan, Yiping Yao, Andrew Yacykewych, Stephen W. Hoag, "Enhancing Dissolution Rate of Carbamazepine via Solvent Casting and Hot-melt Extrusion with a Novel Polymeric Solubilizer (Soluplus[®])"

AAPS Annual Meeting and Exposition, New Orleans, LA, November 2010; H. Howland and S. Hoag. "Determining extent of curing of Eudragit polymer films by monitor changes in Young's Modulus to use as reference for development of Near-Infrared spectroscopy method" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2010)

AAPS Annual Meeting and Exposition, New Orleans, LA, November 2010; H. Lim, H. Howland, Y. Lan, Y. Yao, R. Fahmy, D. Bigio and S. Hoag. "Application of Near-infrared Spectroscopy (NIRS) in Predicting the Solid State of Carbamazepine Solid Dispersions" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2010)

AAPS Annual Meeting and Exposition, New Orleans, LA, November 2010; R. Dandu, R. Kona, R. Fahmy, G. Claycamp and S. Hoag. "Optimization of Formulation and Process Conditions using Statistical Risk Analysis to Set Product Design Space" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2010)

AAPS Annual Meeting and Exposition, New Orleans, LA, November 2010; R. Kona, R. Dandu, R. Fahmy and S. Hoag. "Quality by Design (QbD): Application of Near Infrared Spectroscopy (NIRS) as a control strategy tool for measuring in process and product quality attributes of Ciprofloxacin immediate release tablets produced via roller compaction" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2010)

AAPS Annual Meeting and Exposition, New Orleans, LA, November 2010; I. Ogaji and S. Hoag. "A novel extraction method and physicochemical properties of the extractives of *Irvingia gabonensis*" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2010)

AAPS Annual Meeting and Exposition, New Orleans, LA, November 2010; T. Wang, N. Sheth, M. Eng, J. Polli, C. Holt and S. Hoag. "Pharmacopoeial quality of Sulfamethoxazole/Trimethoprim tablets supplied by pharmacies in six countries" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2010)

AAPS Annual Meeting and Exposition, New Orleans, LA, November 2010; T. Wang, C. Wassgren, K. Alston, T. Li, P. Basu, L. Mockus and S. Hoag. "Key issues in understanding and predicting excipient properties and functionality" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2010)

AAPS Annual Meeting and Exposition, New Orleans, LA, November 2010; V. Moolchandani, R. Kona, T. Freeman, X. Fu, B. Armstrong and S. Hoag. "Dynamic and Static Powder Flow Analysis of Formulations and its Application in Capsule Filling" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2010)

AAPS Annual Meeting and Exposition, New Orleans, LA, November 2010; R. Kona, R. Dandu, R. Fahmy, V. Lancaster, W. Xie, M. Martinez, D. Bensley, J. Polli and S. Hoag. "Correlation Study between Disintegration and Dissolution Tests for Ciprofloxacin Immediate Release Tablets" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2010)

AAPS Annual Meeting and Exposition, New Orleans, LA, November 2010; H. Lim, H. Howland, Y. Lan, Y. Yao, R. Fahmy and S. Hoag. "Enhancing Dissolution Rate of Carbamazepine via Solvent Casting with a Novel Polymeric Solubilizer Soluplus[®]" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2010)

AAPS Annual Meeting and Exposition, New Orleans, LA, November 2010; I. Ogajui and S. Hoag. "Effect of Grewia Gum as a Suspending Agent on Ibuprofen Pediatric Formulation" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2010)

AAPS Annual Meeting and Exposition, New Orleans, LA, November 2010; H. Lim, H. Howland, R. Fahmy, S. Hoag. "Solubility Enhancement of Poorly Water Soluble Drug using a Novel

Polymeric Solubilizer Soluplus[®].” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2010)

37th Annual Meeting and Exposition of the Controlled Release Society, Portland, OR, July 2010, Han-Pin Lim, Yidan Lan, Yiping Yao, David Bigio, Stephen W. Hoag, “Dissolution Enhancement of the Poorly Water Soluble Drug by Solid Dispersion with a Novel Polymeric Solubilizer (Soluplus[®])”

Clinical and Translational Science Award (CTSA) Industry Forum, Bethesda, MD, February 2010; Vadim J. Gurvich, Stephen R. Byrn, Mickey Wells, Stephen W. Hoag, Prabir K. Basu, Robin H. Bogner. “NIPTE: A Multi-University Partnership Supporting Drug Development, Translational Pre-Clinical and Clinical Research in Academia.”

AICHE Annual Meeting: Process Development Division, Nashville, TN, November 2009; Gintaras V. Reklaitis, Hamid Arastoopour, Robin Bogner, James K. Drennen III, Lee E. Kirsch, James Litster, Eric J. Munson, Fernando Muzzio, Raj Suryanarayanan, Stephen W. Hoag and Mansoor A. Khan. “NIPTE-FDA Collaborative Case Study on Model-Based Design Space Development Across Scales and with Stability Considerations.”

AAPS Annual Meeting and Exposition, Los Angeles, CA, November 2009; Dennis Bensley, Ramesh Dandu, Raafat M. Fahmy, Stephen W. Hoag, Ravikanth Kona. “Application of Plackett-Burman design of experiments (DOE) to describe product design space: Identification of critical formulation and process variables.” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2009)

AAPS Annual Meeting and Exposition, Los Angeles, CA, November 2009; Dennis Bensley, Ramesh Dandu, Raafat M. Fahmy, Stephen W. Hoag, Ravikanth Kona. “Investigation of Formulation and Manufacturing Process Variables on Roller Compacted Ciprofloxacin Tablets” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2009)

AAPS Annual Meeting and Exposition, Los Angeles, CA, November 2009; Raafat M. Fahmy, Stephen W. Hoag and Han-Pin Lim. “Formulating Acetaminophen orally dissolving film strip using hot-melt extrusion technique” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2009)

AAPS Annual Meeting and Exposition, Los Angeles, CA, November 2009; Larry L. Augsburger, Stephen W. Hoag, John Langridge and Vikas Moolchandani. “To investigate the influence of machine operating variables on formulation derived from lactose in capsule filling” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2009)

AAPS Annual Meeting and Exposition, Los Angeles, CA, November 2009; Raafat M. Fahmy, Stephen W. Hoag, Leon Meytin and Ting Wang. “Investigation of Near Infrared Spectroscopy Prediction Range for Tablet Film Coating Thickness” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2009)

AAPS Annual Meeting and Exposition, Los Angeles, CA, November 2009; Vivek S. Dave, Raafat M. Fahmy and Stephen W. Hoag. “Investigation of the physical-mechanical properties of

Eudragit® RS PO / RL PO and their binary mixtures with common pharmaceutical excipients” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2009)

AAPS Annual Meeting and Exposition, Los Angeles, CA, November 2009; Peter Butko, Stephen W. Hoag and Harris C. Howland. “Determining extent of curing of Eudragit polymer films using differential scanning calorimetry to monitor glycerol monostearate melting and increase of transition glass temperature” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2009)

AAPS Annual Meeting and Exposition, Atlanta, GA, November 2008; Vikas Moolchandani, Larry L. Augsburger, John Langridge and Stephen W. Hoag. “Quality-by-design (QbD): To identify processing parameters and formulation variables in capsule filling” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2008)

AAPS Annual Meeting and Exposition, Atlanta, GA, November 2008; Vivek S. Dave, Raafat M. Fahmy and Stephen W. Hoag. “Influence of formulation factors and process parameters on functional attributes of sustained-release theophylline tablets prepared by roller-compaction compaction.” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2008)

AAPS Annual Meeting and Exposition, Atlanta, GA, November 2008; Vivek S. Dave, Raafat M. Fahmy and Stephen W. Hoag. “Feasibility of NIR spectroscopy for non-destructive analysis of the breaking force of sustained-release matrix tablets prepared by roller-compaction” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2008)

AAPS Annual Meeting and Exposition, Atlanta, GA, November 2008; Ravikanth Kona, Harris Howland, Raafat M. Fahmy, Dennis M. Bensley, Charles O'Brien and Stephen W. Hoag. “Application of near-infrared spectroscopy to predict different strengths of acetaminophen in different formulations” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2008)

AAPS Annual Meeting and Exposition, Atlanta, GA, November 2008; Han-Pin Lim, Vivek S. Dave, Raafat M. Fahmy, Dennis M. Bensley, Linda Kidder, Charles O'Brien and Stephen W. Hoag. “Monitoring variation in porosity of roller compacted ribbons using NIR imaging as a non-destructive analytical tool” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2008)

AAPS Annual Meeting and Exposition, Atlanta, GA, November 2008; Vikas Moolchandani, Ravikanth Kona, Larry L. Augsburger, John Langridge and Stephen W. Hoag. “Comparative Powder Flow Analysis of Lactose as an Excipient and its Formulations for Capsule Filling” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2008)

AAPS Annual Meeting and Exposition, Atlanta, GA, November 2008; Vikas Moolchandani, Abhay Gupta, Mansoor A. Khan, Larry L. Augsburger, John Langridge and Stephen W. Hoag. “Characterization of different grades of lactose for suitability in capsule filling” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2008)

AAPS Annual Meeting and Exposition, Atlanta, GA, November 2008; Stuart Cantor, Stephen W. Hoag and Larry L. Augsburger. “Evaluation of the mechanical properties of extrusion-

spheronized beads and multiparticulate systems” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2008)

AAPS Annual Meeting and Exposition, San Diego, CA, November 2007; Stuart Cantor, Stephen W. Hoag and Larry L. Augsburger. “NIR Spectroscopy Applications in the Development of a Compacted Multiparticulate System for Modified Release” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2007)

AAPS Annual Meeting and Exposition, San Diego, CA, November 2007; Vivek S. Dave, Raafat Maher Fahmy and Stephen W. Hoag. “Formulation and functional evaluation of theophylline matrix tablets prepared by roller compaction” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2007)

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AAPS Annual Meeting and Exposition, San Diego, CA, November 2007; Vikas Moolchandani, John Langridge, Larry L. Augsburger and Stephen W. Hoag. “Evaluation of Dry Granulation of Lactose Based Formulations in Capsule Filling” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2007)

AAPS Annual Meeting and Exposition, San Diego, CA, November 2007; Huiquan Wu, Lin Xie, Mansoor A. Khan, Meiyu Shen, Larry Augsburger, Stephen W. Hoag. “Quality by Design (QbD) Approach for Pharmaceutical Capsule Filling Unit Operation” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2007)

AAPS Annual Meeting and Exposition, San Diego, CA, November 2007; Simin Hassannejad Tabasi, Vikas Moolchandani, Raafat Maher Fahmy and Stephen W. Hoag. “Application of NIR Spectroscopy for Non-destructive Analysis of Dissolution Profile of Sustained Release Matrix Tablets” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2007)

AAPS Annual Meeting and Exposition, San Diego, CA, November 2007; Stuart Cantor, Stephen W. Hoag and Larry L. Augsburger. “Dissolution behavior and kinetic modeling of multiparticulate modified release systems containing ethylcellulose as both a matrix and film coating” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2007)

The Inaugural University of Maryland Patient Safety Symposium, Baltimore, MD, January, 2007; James Polli, and Stephen W. Hoag, “Application of Near Infrared Spectroscopy to differentiate counterfeit and authentic drug products”

AAPS Annual Meeting and Exposition, San Antonio, TX, October 2006; L. Xie, V. Moolchandani, L. Augsburger, S. Hoag. “Evaluating Formulation Performance Differences Due to Formulation Parameter Changes Using Two Instrumented Capsule Filling Machines” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2006)

AAPS Annual Meeting and Exposition, San Antonio, TX, October 2006; S. Hassannejad Tabasi, R. Fahmy, D. Bensley, W. Marnane, S. Hoag. "Quality by Design Part III: Prediction of Curing Endpoint for Sustained Release Polymer Products Using NIR Spectroscopy and Multivariate Analysis" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2006)

AAPS Annual Meeting and Exposition, San Antonio, TX, October 2006; S. Hassannejad Tabasi, R. Fahmy, D. Bensley, W. Marnane, S. Hoag. "Quality by Design: Application of NIR Spectroscopy in Tablet Coating Process and Dissolution Testing for Blends of Polyacrylates" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2006)

AAPS Annual Meeting and Exposition, San Antonio, TX, October 2006; S. Hassannejad Tabasi, R. Fahmy, D. Bensley, W. Marnane, S. Hoag. "Quality by Design: Application of NIR Spectroscopy to Monitor Manufacturing Process for Orbifloxacin Tablets" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2006)

AAPS Annual Meeting and Exposition, San Antonio, TX, October 2006; V. Moolchandani, S. Hassannejad Tabasi, R. Fahmy, S. Hoag. "Study of Linear and Non-linear Correlation between Compression Force and Crushing Strength of Theophylline Tablets Using NIR Spectroscopy" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2006)

AAPS Annual Meeting and Exposition, San Antonio, TX, October 2006; L. Xie, H. Wu, M. Khan, L. Augsburger, A. Hussain, S. Hoag. "Use of Multivariate Data Analysis Tools to Understand the Key Formulation and Process Parameters in Capsule Filling Process on Two Types of Automatic Machines" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2006)

Twelfth Annual FDA Science Forum, Washington, DC, April, 2006; Lin Xie, Huiquan Wu, Larry L. Augsburger, Mansoor A. Khan, Ajaz S. Hussain and Stephen W. Hoag, "Using an Experimental Design Approach to Study the Statistical Relationship between Formulation Parameters, Process Parameters, and Capsule Weight Variation in Capsule Filling on Two Types of Automatic Machines"

Twelfth Annual FDA Science Forum, Washington, DC, May, 2006; S. Hassannejad Tabasi, R. Fahmy, W. Marnane, D. Bensley and S. Hoag, "Application of NIR Spectroscopy for the Monitoring of Tablet Coat Thickness and Prediction of Drug Release from Different Acrylate Copolymers."

AAPS Annual Meeting and Exposition, Memphis TN, November 2005; Hassannejad Tabasi, Simin; Hoag, Stephen; Polli, James. "Application of Near Infrared Spectroscopy to Differentiate Counterfeit and Authentic Drug Products" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2005)

AAPS Annual Meeting and Exposition, Memphis TN, November 2005; Fahmy, Raafat; Hassannejad Tabasi, Simin; Hoag, Stephen, "Application of NIR Spectrometry to Monitor Curing End Point in Coating Formulations Containing Crosslinker Copolymer " *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2005)

AAPS Annual Meeting and Exposition, Memphis TN, November 2005; Bakeev, Katherine; Bensley, Dennis; Fahmy, Raafat; Hassannejad Tabasi, Simin; Hoag, Stephen; Marnane, William, "Calibration Transfer and Direct Prediction of Drug Content for Process Analytical Technology Using Near Infrared Spectroscopy" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2005)

AAPS Annual Meeting and Exposition, Memphis TN, November 2005; Dalby, Richard; Ganguly, Sudipta; Hoag, Stephen; Nithyanandan, Pallavi, "Characterization of Metered Dose Inhaler Robustness: A Stress Analysis and Mechanical Failure Study" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2005)

AAPS Annual Meeting and Exposition, Memphis TN, November 2005; Augsburger, Larry; Hoag, Stephen; Hussain, Ajaz; Wu, Huiquan; Xie, Lin, "Correlation Between Segregation Propensity and Capsule Weight and Content Uniformity for Different Aspirin Formulations" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2005)

AAPS Annual Meeting and Exposition, Memphis TN, November 2005; Hoag, Stephen; Muller, Francis X.; Tatavarti, Aditya S, "Evaluation of the Deformation Behavior of Methacrylic Acid Copolymers Using a Compaction Simulator" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2005)

AAPS Annual Meeting and Exposition, Memphis TN, November 2005; Augsburger, Larry; Hoag, Stephen; Hussain, Ajaz; Khan, Mansoor; Wu, Huiquan; Xie, Lin, "Optimization of Experimental Methodology for ASTM D 6940 Segregation Tester for Pharmaceutical Powder" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2005)

AAPS Annual Meeting and Exposition, Memphis TN, November 2005; Dalby, Richard; Hoag, Stephen; Nithyanandan, Pallavi, "Prediction of Mechanical Failure in Metered Dose Inhalers (MDIs) using Finite Elements Analysis (FEA)" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2005)

AAPS Annual Meeting and Exposition, Memphis TN, November 2005; Augsburger, Larry; Hoag, Stephen; Hussain, Ajaz; Wu, Huiquan; Xie, Lin, "Use of Dyed Materials to Evaluate Powder Bed Movement in a Capsule Filling Machine" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2005)

AAPS Annual Meeting and Exposition, Memphis TN, November 2005; Dennis; Fahmy, Raafat; Hoag, Stephen; Kidder, Linda; Lee, Eunah; Lewis, Neil; Marnane, William; Xie, Lin, "The Use of Near Infrared Imaging to Understand Dissolution Mechanism" *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2005)

Controlled Release Society 32nd Annual Meeting & Exposition, Miami, FL, June 2005, Raafat Fahmy and Stephen W. Hoag, "Potential Applications of Process Analytical Technology for Veterinary Pharmaceuticals." Poster presentation.

Eleventh Annual FDA Science Forum, Washington, DC, May, 2005; S. Hassannejad Tabasi, k. Bakeev, R. M. Fahmy, W. Marnane, D. Bensley, and S Hoag, "A Comparative Study of Single

and Group Assay of Solid Pharmaceutical Dosage Forms to Determine the Potential Sources of Variability Using Near-Infrared Spectroscopy and Chemometric Models”

Eleventh Annual FDA Science Forum, Washington, DC, May, 2005; R. M. Fahmy, W. Marnane, D. Bensley, and S Hoag, “Preprocessing Method Selection Strategies for Chemometric NIR Spectral Analysis”

Eleventh Annual FDA Science Forum, Washington, DC, May, 2005; L. Xie, H. Wu, L.L. Augsburger, A.S. Hussain and S.W. Hoag, “The Segregation Propensity of Formulations with Different Drug to Excipient Particle Size Ratios in Capsule Filling Performance”

AAPS Annual Meeting and Exposition, Baltimore, MD, November 2004; L. Xie, H. Wu, L. Augsburger, A. Hussain, S. Hoag, “Preliminary results on the effect of segregation propensity on capsule filling performance” *PharmSci* (serial on the internet): Available from: <http://www.pharmsci.org/journal> (2004)

AAPS Annual Meeting and Exposition, Baltimore, MD, November 2004; A. Tatavarti, R. Fahmy, L. Xie, Y. Zou, W. Steber, G. Hollenbeck, S. Hoag, “NIR Based Nondestructive Determination of Drug Release from Sulfamethazine Boluses Manufactured by Modulation of Formulation and Process Variables” *PharmSci* (serial on the internet): Available from: <http://www.pharmsci.org/journal> (2004)

AAPS Annual Meeting and Exposition, Baltimore, MD, November 2004; A. Tatavarti, K. Mehta, L. Augsburger, S. Hoag, “Microenvironmental pH Modulation Based Release Enhancement and Investigation into Solid State Drug Stability” *PharmSci* (serial on the internet): Available from: <http://www.pharmsci.org/journal> (2004)

AAPS Annual Meeting and Exposition, Baltimore, MD, November 2004; P. Nithyanandan, S. Hoag, R. Dalby, “Development of a Rational Test Method for the Analysis of Robustness of Inhaler Devices” *PharmSci* (serial on the internet): Available from: <http://www.pharmsci.org/journal> (2004)

AAPS Annual Meeting and Exposition, Baltimore, MD, November 2004; R. Fahmy, A. Tatavarti, W. Marnane, D. Bensley, S. Hoag, “Preprocessing of Data for Chemometric Analysis” *PharmSci* (serial on the internet): Available from: <http://www.pharmsci.org/journal> (2004)

Controlled Release Society 31st Annual Meeting & Exposition, Honolulu, HI, June 2004, Aditya S. Tatavarti, Ketan A. Mehta, Larry L. Augsburger, Stephen W. Hoag, “Effect of a Methacrylic Acid Polymer on Modulation of Microenvironmental pH and Release of Weakly Basic Drugs From Sustained Release Hydrophilic Matrices” Poster presentation.

Tenth Annual FDA Science Forum, Washington, DC, May, 2004; Raafat Fahmy Aditya S. Tatavarti, Huiquan Wu, Ajaz Hussain, William Marnane, Dennis Bensley, Gary Hollenbeck, and Stephen W. Hoag, “Assessment of NIR Spectroscopy for Process Analytical Testing of Sulfamethazine Boluses Using Different Statistical Models”

Tenth Annual FDA Science Forum, Washington, DC, May, 2004; Aditya Tatavarti, Raafat Fahmy, Lin Xie, Yu Zou, Dennis Bensely, Bill Marnane, Gary Hollenbeck and Stephen W Hoag, "Formulation of Sulfamethazine Boluses with Varying Release Rates and Assessment of the Predictive Potential of NIR On Drug Release"

Respiratory Drug Delivery IX Conference, Palm Desert, California, April 2004; Pallavi Nithyanandan, Stephen Hoag and Richard Dalby "Analysis of Robustness of Inhaler Devices: Response of pMDIs to Mechanical Stresses" Respiratory Drug Delivery IX, DHI Publishing, pp 789-792, 2004.

AAPS Annual Meeting and Exposition, Salt Lake City, UT, October 2003; Aditya Tatavarti, Ketan Mehta, Larry Augsburger and Stephen Hoag, "Release Performance Of Weakly Basic Drugs From Sustained Release Matrix Tablets Incorporated With Acrylic And Methacrylic Acid Polymers" *PharmSci* (serial on the internet): Available from: <http://www.pharmsci.org/journal> (2003)

AAPS Annual Meeting and Exposition, Salt Lake City, UT, October 2003; Raafat Fahmy, Aditya Tatavarti, Segmia Tata, Dennis Bensley, William Marnane, Dilara Jappar, Peter Poczatek, Gary Hollenbeck and Stephen Hoag, "Assessment Of The NIR Technique For Process Analytical Testing Of Physicochemical Properties Of Sulfamethazine Boluses" *PharmSci* (serial on the internet): Available from: <http://www.pharmsci.org/journal> (2003)

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AAPS Annual Meeting and Exposition, Toronto, Ontario, Canada, November 2002; Nasser N. Nyamweya, Ketan A. Mehta and Stephen Hoag, "The effect of Aluminum lakes on film properties" *PharmSci* (serial on the internet): Available from: <http://www.pharmsci.org/journal> (2002)

AAPS Annual Meeting and Exposition, Toronto, Ontario, Canada, November 2002; Adam A. Dinerman, Joe Cappello, Hamid Ghandehari, Stephen Hoag, "Influence of Solute Properties on Partitioning and Diffusion in a Genetically Engineered Silk-Elastinlike Protein Polymer Hydrogel" *PharmSci* (serial on the internet): Available from: <http://www.pharmsci.org/journal> (2002)

AAPS Annual Meeting and Exposition, Toronto, Ontario, Canada, November 2002; Aditya S Tatavarti, Hanu Ramachandrani, Jianping Du, Queenie Yin-Liu and Stephen W. Hoag, "Predicting the Behavior of Lubricants During Compaction Using Shear Analysis" *PharmSci* (serial on the internet): Available from: <http://www.pharmsci.org/journal> (2002)

Sixth New Jersey Symposium on Biomaterials Science on "The Next Generation of Biomaterials", New Jersey Center for Biomaterials, Somerset, NJ, October 17-18, 2002; H. Ghandehari, J. Cappello, A. Nagarsekar, A. Dinerman, S. Hoag, and Z. Megeed, "Genetically Engineered Silk-Elastinlike Block Copolymers For Controlled Gene and Drug Delivery"

Fifth International Symposium on Biorelated Polymers, Fall American Chemical Society Meeting, Boston, MA, August 18-22, 2002; H. Ghandehari, J. Cappello, A. Nagarsekar, A. Dinerman, S. Hoag, and Z. Megeed, "Genetic Engineering of Silk-Elastinlike Protein Polymers for Drug Delivery."

AAPS Pharmaceutics and Drug Delivery Conference, Arlington, VA, April 2002; Aditya S Tatavarti, Hanu Ramachandrani, Jianping Du, Queenie Yin-Liu, and Stephen W. Hoag, "A Modified Annular shear cell to measure powder lubricity."

Course and Workshop on Cell Culture and Ex-Vivo Models for Drug Absorption and Delivery, Department of Biopharmacy and Pharmaceutical Technology, Saarland University, Saarbrücken, Germany, February, 2002; H. Ghandehari, J. Cappello, A. Nagarsekar, A. Dinerman. S. Hoag, and Z. Megeed, "Controlled Drug Delivery From Genetically Engineered Silk-Elastinlike Copolymers, Fourth Intensive."

AAPS Annual Meeting and Exposition, Denver, CO, October 2001; Adam A. Dinerman, Joe Cappello, Hamid Ghandehari, Stephen Hoag, "Characterization of a Genetically Engineered Silk-Elastinlike Hydrogel for Drug Delivery" *PharmSci* (serial on the internet) 3(3 supplement): Available from: <http://www.pharmsci.org/journal> (2001)

AAPS Annual Meeting and Exposition, Denver, CO, October 2001; Renuka Nair, Serpil Gonen, Stephen W. Hoag, "Influence of Poly(ethylene glycol) and Ppoly(vinylpyrrolidone) on the Polymorphic Transitions of Carbamazepine" *PharmSci* (serial on the internet) 3(3 supplement): Available from: <http://www.pharmsci.org/journal> (2001)

AAPS Annual Meeting and Exposition, Denver, CO, October 2001; Nasser Nyamweya, Ketan A. Mehta, Stephen W. Hoag, "Interactions in Film Coating Formulations of Aqueous Polymeric Latex Dispersions and Aluminum Lake Pigments" *PharmSci* (serial on the internet) 3(3 supplement): Available from: <http://www.pharmsci.org/journal> (2001)

AAPS Annual Meeting and Exposition, Denver, CO, October 2001; Jianping Du, Francis X. Muller, Stephen W. Hoag, "The Effect of Porosity on the Three Dimensional Elastic Properties of Tablets Made on a Compaction Simulator" *PharmSci* (serial on the internet) 3(3 supplement): Available from: <http://www.pharmsci.org/journal> (2001)

AAPS Annual Meeting and Exposition, Denver, CO, October 2001; Renuka Nair, Francis X. Muller, Stephen W. Hoag, "Use of Compaction Simulator to Determine the Mechanical Properties of Solid Dispersions" *PharmSci* (serial on the internet) 3(3 supplement): Available from: <http://www.pharmsci.org/journal> (2001)

AAPS Annual Meeting and Exposition, Indianapolis, IN, November 2000; N. Nyamweya, K. A. Mehta and S. W. Hoag, "Preformulation of Aluminum Lakes" *PharmSci* (serial on the internet) 2(4 supplement): Available from: <http://www.pharmsci.org/journal> (2000)

AAPS Annual Meeting and Exposition, Indianapolis, IN, November 2000; J. Du, N. Eddington and S. Hoag, "Development of Glucosamine-Chondroitin Direct Compression Chewable Tablet"

PharmSci (serial on the internet) 2(4 supplement): Available from: <http://www.pharmsci.org/journal> (2000)

AAPS Annual Meeting and Exposition, Indianapolis, IN, November 2000; J. Du, F. X. Muller and S. W. Hoag, "The Elastic Modulus of Tablets Made from Mixtures of Pharmaceutical Powders" *PharmSci* (serial on the internet) 2(4 supplement): Available from: <http://www.pharmsci.org/journal> (2000)

AAPS Annual Meeting and Exposition, Indianapolis, IN, November 2000; R. Nair and S. W. Hoag, "Solid State Characterization of Drug Polymer Interactions" *PharmSci* (serial on the internet) 2(4 supplement): Available from: <http://www.pharmsci.org/journal> (2000)

AAPS Annual Meeting and Exposition, Indianapolis, IN, November 2000; H. Ramachandrani and S. W. Hoag, "Effect of Consolidation State on the Flow and Lubrication Properties of Powder Beds" *PharmSci* (serial on the internet) 2(4 supplement): Available from: <http://www.pharmsci.org/journal> (2000)

AAPS Annual Meeting and Exposition, Indianapolis, IN, November 2000; K. M. Picker, R. Nair and S. W. Hoag, "Tablet Elasticity: Correlation of Elastic Modulus and Parameters from Three-Dimensional Modeling" *PharmSci* (serial on the internet) 2(4 supplement): Available from: <http://www.pharmsci.org/journal> (2000)

The 20th Annual GRASP Conference, June 2000; Renuka Nair and Stephen W. Hoag, "Solid State Characterization of Drug Polymer Interactions" Seminar presented by RN.

The 20th Annual GRASP Conference, June 2000; N. Nyamweya and S.W. Hoag, "Preformulation of Aluminum Lakes"

Eastern Analytical Society Meeting November 1999; Ronald Rubinovitz, Jianping Du, Myron Duell and Stephen W. Hoag, "Near-Infrared Spectroscopy as a Research Tool: Monitoring of Aspirin Tablet Degradation in a Stability Study."

AAPS Annual Meeting and Exposition, New Orleans, LA, November 1999; J. Du, J. Wang, S.W. Hoag, "Optimization of Folic Acid Dissolution From Multivitamin Tablets With Minerals Using Soluble Excipients" *PharmSci* (serial on the internet) 1(4 supplement): Available from: <http://www.pharmsci.org/journal> (1999)

AAPS Annual Meeting and Exposition, New Orleans, LA, November 1999; J. Du, M. Duell, S. Tolle, M. Kemper, S.W. Hoag, "Monitoring of Aspirin Degradation Using Near-Infrared Spectroscopy" *PharmSci* (serial on the internet) 1(4 supplement): Available from: <http://www.pharmsci.org/journal> (1999)

AAPS Annual Meeting and Exposition, New Orleans, LA, November 1999; N.N. Nyamweya, S.W. Hoag, "Polymer-Polymer Interactions in Blends of Film-Forming Polymers by MTDSC" *PharmSci* (serial on the internet) 1(4 supplement): Available from: <http://www.pharmsci.org/journal> (1999).

AAPS Annual Meeting and Exposition, New Orleans, LA, November 1999; J. Du, S.W. Hoag, "Comparison of Drug Stability in Tablets Containing Lactose Monohydrate With Tablets Containing Anhydrous Lactose" *PharmSci* (serial on the internet) **1**(4 supplement): Available from: <http://www.pharmsci.org/journal> (1999).

AAPS Annual Meeting and Exposition, New Orleans, LA, November 1999; R. Kuppuswamy, S.R. Anderson, R. Shah, S.W. Hoag, L.L. Augsburger, "Indentation Hardness as a Possible Surrogate for Tableting Indices to Predict Tablet Failure" *PharmSci* (serial on the internet) **1**(4 supplement): Available from: <http://www.pharmsci.org/journal> (1999).

AAPS Annual Meeting and Exposition, New Orleans, LA, November 1999; R. Nair, S. Hoag, F. Muller, "An Innovative Approach for the Complete Characterization of Material Properties Using a Compaction Simulator" *PharmSci* (serial on the internet) **1**(4 supplement): Available from: <http://www.pharmsci.org/journal> (1999).

AAPS Annual Meeting and Exposition, New Orleans, LA, November 1999; H.V. Ramachandrani, S.W. Hoag, "Flow Testing of Some Pharmaceutical Excipients Using an Annular Shear Cell" *PharmSci* (serial on the internet) **1**(4 supplement): Available from: <http://www.pharmsci.org/journal> (1999).

Philadelphia Pharmaceutical Forum Student Poster Night, Philadelphia, PA, March 1999; Renuka Nair, Stephen W. Hoag and Francis X. Muller, "A Novel Method for the Determination of Young's Modulus, Shear Modulus, Bulk Modulus and Poisson's Ratio Using a Compaction Simulator."

Philadelphia Pharmaceutical Forum Student Poster Night, Philadelphia, PA, March 1999; Jianping Du and Stephen W. Hoag, "Comparison of Drug Stability in Tablets Containing Lactose Monohydrate with Tablets Containing Anhydrous Lactose at Different Relative Humidities."

Philadelphia Pharmaceutical Forum Student Poster Night, Philadelphia, PA, March 1999; Hanu Ramachandrani and Stephen W. Hoag, "Application of a Modified Annular Shear Cell in Measuring Lubrication of Pharmaceutical Powders."

AAPS Annual Meeting and Exposition, San Francisco, CA, November 1998; Rajesh Kuppuswamy, Rajen Shah, Stephen R. Anderson, Richard V. Vivilecchia, Stephen W. Hoag and Larry L. Augsburger, "Estimation of Compactibility of Mixtures Using Tableting Indices" *PharmSci*. **1**:S84(1998).

AAPS Annual Meeting and Exposition, San Francisco, CA, November 1998; Katharina M. Picker, Nasser N Nyamweya and Stephen W. Hoag, "The Effect of Glass Transition Temperature of MCC on the Compaction Properties" *PharmSci*. **1**:S174(1998).

AAPS Annual Meeting and Exposition, San Francisco, CA, November 1998; Hanu Ramachandrani and Stephen W. Hoag, "Application of a Modified Annular Shear Cell in Measuring Lubrication of Pharmaceutical Powders" *PharmSci*. **1**:S312(1998).

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University of Maryland School of Pharmacy Research Day, Baltimore, MD, April 1998; Nasser N. Nyamweya, Katharina M. Picker and Stephen W. Hoag, "Glass Transition Temperature of MCC by Modulated DSC".

Twelfth Annual AAPS Meeting and Exposition, Boston, MA, November 1997; S Inoue, R Guenther and S Hoag, "Moving Boundary Model of Calcium Alginate Gel Formation" *Pharm. Res.* **14**:S38(1997).

Twelfth Annual AAPS Meeting and Exposition, Boston, MA, November 1997; J. Du, S. Hoag and J. Chen, "Pharmacokinetic Study of γ -Linolenic Acid Administered Via Evening Primrose Oil and a Novel Emulsion Formulation" *Pharm. Res.* **14**:S612(1997).

Philadelphia Pharmaceutical Forum Student Poster Night, Philadelphia, PA, March 1997; Feng Lin, Stephen W. Hoag and Larry L. Augsburger, "Potential Application of New Grades of Microcrystalline Cellulose (Avicel PH-301 and PH-302) To Formulations Intended for Filling Hard Gelatin Capsules".

Eleventh Annual AAPS Meeting and Exposition, Seattle, WA, October 1996; Feng Lin, Stephen Hoag and L.L. Augsburger, "Potential Application of New Grades of Microcrystalline Cellulose (Avicel PH-301 and PH-302) To Formulations Intended for Filling Hard Gelatin Capsules" *Pharm. Res.* **13**:S195(1996).

Tenth Annual AAPS Meeting and Exposition, Miami, FL, November 1995; Syed A. Altaf, Stephen W. Hoag and James W. Ayres, "Bead Compacts: Development of a Sustained Release Product from Compressed Bead formulations" *Pharm. Res.* **12**:S218(1995).

Tenth Annual AAPS Meeting and Exposition, Miami, FL, November 1995; Shawna K. Inoue and Stephen W. Hoag, "Experimental Measurement of Calcium Alginate Gel Formation" *Pharm. Res.* **12**:S212(1995).

22nd International Symposium on Controlled Release of Bioactive Materials, Seattle, WA, August 1995; Syed A. Altaf, Stephen W. Hoag and James W. Ayres, "Bead Compacts I: Effect of Multi-Layered Beads on Maintenance of Polymer Coat Integrity".

AAPS Western Regional Meeting, San Jose, CA, March 1995; Syed A. Altaf, Stephen W. Hoag and James W. Ayres, "Bead Compacts: Formulation considerations in Development of a Sustained Release Product".

Ninth Annual AAPS Meeting and Exposition, San Diego, CA, November 1994; Syed A. Altaf, Chuntien Yeh and Stephen W. Hoag, "Use of Finite Element Modeling to Validate and Optimize an Improved Instrumented Tablet Die Design for Die Wall Stress Measurement" *Pharm. Res.* **11**:S132(1994).

Ninth Annual AAPS Meeting and Exposition, San Diego, CA, November 1994; Shawna Kondo and Stephen W. Hoag, "Modeling of Mass Transfer Processes in Alginate Gel Formation" *Pharm. Res.* **11**:S285(1994).

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AAPS Western Regional Meeting, San Francisco, CA, March 1994; Syed A. Altaf, C. T. Yeh and Stephen W. Hoag, "Optimization of Tablet Die Design for Die Wall Stress Measurement".

Eighth Annual AAPS Meeting and Exposition, Orlando, FL, November 1993; Syed A. Altaf and Stephen W. Hoag, "The Effect of Tablet Machine Elasticity on The Work of Compaction" *Pharm. Res.* **10**:S150(1993).

Eighth Annual AAPS Meeting and Exposition, Orlando, FL, November 1993; David W. Schultz, Stephen W. Hoag, Gary H. Ward and Robert K. Schultz, "The Relationship Between Kauri-Butanol Values and Solubility Parameters to Swell and Leak Rate of Common Rubbers in Non-CFC MDI Formulations" *Pharm. Res.* **10**:S150(1993).

AAPS Western Regional Meeting, San Francisco, CA, March 1993; Syed A. Altaf and Stephen W. Hoag, "Estimation of Work of Compaction Using Elastic Correction Factors for a Rotary Tablet Press."

AAPS Western Regional Meeting, San Francisco, CA, March 1993; Dilip Kaul and Stephen W. Hoag, "Validation of Punch Displacement Equations Using Dial Indicator."

Seventh Annual AAPS Meeting and Exposition, San Antonio, TX, November 1992; Syed A. Altaf, PengJin Xu and Stephen W. Hoag, "Linear Elastic Analysis of Tablet Machine Deformation" *Pharm. Res.* **9**:S117(1992).

AAPS Western Regional Meeting, Reno, Nevada, March 1992; Syed A. Altaf, Dilip Kaul and Stephen W. Hoag, "Static Measurements of Tablet Machine Deformation Using a Cathetometer."

AAPS Western Regional Meeting, Reno, Nevada, March 1992; PengJin Xu, Syed A. Altaf and Stephen W. Hoag, "Dynamic Characterization of an Instrumented Lower Compression Roller Pin in a Rotary Tablet Press: Influence of Eye-bolt Position."

Sixth Annual AAPS Meeting and Exposition, Washington, DC, November 1991; Stephen W. Hoag and Robert K. Schultz, "The Evaluation of Propellant Blends by Analysis of Kauri-Butanol Values" *Pharm. Res.* **8**:S121(1991).

Sixth Annual AAPS Meeting and Exposition, Washington, DC, November 1991; Syed A. Altaf, PengJin Xu and Stephen W. Hoag, "The Dynamic Characterization of An Instrumented Lower Compression Roller Pin in a Rotary Tablet Press During Tablet Compaction" *Pharm. Res.* **8**:S98(1991).

AAPS Western Regional Meeting, Reno, Nevada, March 1991; Stephen W. Hoag and Syed A. Altaf, "Statistical and Numerical Methods for the Determination of Reversible and Irreversible Energy Dissipated During the Unloading Phase of Tablet Compaction."

Fifth Annual AAPS Meeting and Exposition, Las Vegas, Nevada, November 1990; Stephen W. Hoag and Edward G. Rippie, "The Application of Thermodynamic Principles to Pharmaceutical Tablets" *Pharm. Res.* **7**:S76(1990).

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AAPS Midwest Regional Meeting, Chicago, Illinois, May 1988; Stephen W. Hoag and Edward G. Rippie, "Statistical Analysis of Linear Viscoelastic Tableting Data During the Unloading Phase of Manufacture."

SEMINARS

Fourth Category 1 Focus Group meeting, Alexandria VA, June 2019, Stephen W. Hoag and Chris Altomare, "Emerging Technologies - Vaping" Invited Seminar (On meeting planning committee)

IFPAC Annual Meeting, North Bethesda, MD, March 2019, Stephen W. Hoag, "Excipient Risk Assessment Database" Invited Seminar.

Eastern Analytical Symposium and Exhibition, Princeton, NJ, November 2018, Stephen W. Hoag and Adam J. Hopkins, "Counterfeit Tablet Analysis Using a Handheld Raman Spectroscopy" Invited Seminar.

2018 Compaction Simulation Forum, Genentech South San Francisco, CA, June 2018, Stephen W. Hoag and Raghunadha Reddy Seelam, "Evaluation of the effects of tablet compression force and tableting speed on polyethylene oxide polymers in abuse deterrent formulations" Invited Seminar.

FY 2018 Generic Drug Regulatory Science Initiatives Public Workshop, Silver Spring, MD, May 2018, Stephen W. Hoag, "Critical Issues in The Use and Evaluation of Excipients in Dosage Forms Such As Pediatric, Geriatric and Abuse Deterrent Dosage Forms" Invited Seminar.

Computer-Aided Drug Design Symposium, Baltimore, MD, May 2018, Stephen W. Hoag, "The formulation of therapeutic antibodies for colonic delivery" Invited Seminar.

FDA Seminar, Silver Spring, MD, April 2018, Stephen Byrn, Feng Zhang and Stephen W. Hoag, "Effect of Excipient Variability on the Critical Quality Attributes of Opioid Drugs based on Polyethylene Oxide" Invited Seminar.

Third Category 1 Focus Group Meeting, Alexandria, VA, January 2018, Stephen W. Hoag, "New methods and technologies in ADT – academia perspective" Invited Seminar and was on organizing committee.

FDA Seminar, Silver Spring, MD, January 2018, Fang Wang, Chandima Nadungodage, Andres Bejarano, Ann Christine Catlin and Stephen W. Hoag, "Report and Demonstration of the Excipient Risk Assessment Database" Invited Seminar.

Eudragit® Advanced Workshop , Piscataway, NJ, December 2017, Stephen W. Hoag, "Analysis of curing of a sustained release coating formulation by application of NIR spectroscopy" Invited Seminar.

NIPTE Annual Conference, USP, Rockville, MD, September 2017; NIPTE Planning Committee; "Re-thinking Pharmaceutical Technology Continuing Education" Member of Organizing committee

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NIPTE Center of Excellence for Abuse Deterrent Opioid Technologies, Purdue University, West Lafayette, IN, June 2017; Feng Zhang and Stephen W. Hoag; “Standardizing Procedures for Category 1 Testing” Invited Seminar

FDA lecture, Silver Spring, MD, May 2017; Stephen W. Hoag; “Real Time Release Testing of Ciprofloxacin HCl Modified Release Capsules: Case Study” Invited Seminar

AAPS Annual Meeting and Exposition/BASF symposium, Denver, CO, November 2016; Stephen W. Hoag; “Recent Trends in Instant and Modified Release Formulations” *PharmSci*: Available from: <http://www.pharmsci.org/journal> (2016) Invited Seminar

Public Meeting on Pre-Market Evaluation of Abuse-Deterrent Properties of Opioid Drug Products, College Park, MD, November 2016, Stephen W. Hoag, “Foundations of in vitro comparisons of generic opioids to reference listed drugs (RDLs) with labeling describing abuse-deterrent properties” Invited Seminar

Evonik Technical Symposium on Controlled Release & Solubility Enhancement, San Francisco, CA, October 2016, Stephen W. Hoag, “Use of Colonic Delivery Systems for the Local Delivery of Proteins to the Colon” Invited Seminar.

NIPTE Research Conference: Scientific Design of Pharmaceutical Product: 21st Century Methodologies, Technologies & Perspectives, FDA White Oaks Campus, Silver Spring, MD, October 2016, Stephen W. Hoag, “Material Characterization and Control and Knowledge Management Consideration for Continuous Manufacturing with the Real-Time Release” Invited Seminar and I was on the meeting planning committee.

SciX2016 National Meeting, Minneapolis, MN, September 2016, Heather Boyce and Stephen W. Hoag, “Analysis of Polyethylene Oxide in Sintered Pharmaceutical Tablets by Transmission Raman”

LyoHUB-NIPTE workshop at NIST, Gaithersburg, MD, September 2016, Stephen W. Hoag, “NIPTE excipients database” Invited Seminar

SciX2016 National Meeting, Minneapolis, MN, September 2016, Stephen W. Hoag and Ahmed Ibrahim, “Combining fluid bed process data with spectral data to improve model prediction of product performance” Invited Seminar

Lab Manager “Ask the Expert” Webinar Series, Online, March 2016, Keith Freel and Stephen W. Hoag, “Reagent-Free Tablet Manufacturing Analysis by Near-IR Spectroscopy” Invited Webinar

2nd Excipient Workshop: Focus on Excipient Quality, Compendial Testing, and Regulatory Impact, Rockville, MD, November 2015, Stephen W. Hoag, “Global Excipient Databases – NIPTE Overview” Invited Seminar

FDA Abuse Deterrent Formulation Presentation, Silver Spring, MD, November 2015, Heather Boyce, Daniel Smith, Vadim Gurvich, Stephen Byrn and Stephen W. Hoag, “Material Properties in Abuse Deterrent Formulations and the development of a nasal test method” Invited Seminar

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Category 1 Focus Group meeting, Washington, DC, November 2015, Heather Boyce, Daniel Smith, Vadim Gurvich, Stephen Byrn and Stephen W. Hoag, “Can we standardize household tools?” Invited Seminar

Second FDA/PQRI Conference on Advancing Product Quality, North Bethesda, MD, October 2015, Stephen W. Hoag and Sau Larry Lee, “Botanical Drug Development and Quality Standards” Meeting organizer and presented wrap up summary

Shin-Etsu Meeting: Recent Advances in Drug Delivery and Solubility Enhancement Based on Cellulosic Polymers, Somerset, NJ, September 2015, Tanvi Deshpande and Stephen W. Hoag, “The Effect of Plasticizers on the Thermal, Mechanical and Colloidal Properties of Cellulosic Polymers” Invited Seminar

GDUFA: FY 2015 Regulatory Science Initiatives Part 15 Public Meeting; Regulatory Science Initiatives Part 15 Public Meeting; Request for Comments, FDA, Silver Spring, MD, June 2015, Stephen W. Hoag, “Research needs in pharmaceutical excipients: implications of a global supply chain”

NIPE Research Conference: Pharmaceutical Critical Path Manufacturing-2015, Shady Grove, MD, April 2015, Stephen W. Hoag, “Methods for the Assessment of Cold Flow in Matrix Transdermal Drug Delivery Systems” Invited Seminar and I was on the meeting planning committee.

Excipient Fest Americas, San Juan, Puerto Rico, April 2015, Stephen W. Hoag, “The Pharmaceutical Excipients Database Hosted on PharmaHUB” Invited Seminar

APhA 2015 Annual Meeting and Exposition, San Diego, CA, March 2015, Stephen W. Hoag, “A Review of Abuse Deterrent Formulations” Invited Educational Seminar

50th AAPS Arden Conference, Baltimore, MD, March 2015, Sharmista Chatterjee and Stephen W. Hoag, “Case Studies in Continuous Manufacturing Session Moderators” On Program Committee

Excipient Qualification Committee Meeting, Alexandria, VA, February 2015, Stephen W. Hoag, “The Pharmaceutical Excipients Database Hosted on PharmHUB” Invited for Seminar

Drug Delivery Partnerships, Boca Raton, FL, January 2015, Debra Bingham, Will Clodfelter, Danchen Gao, Stephen W. Hoag and Fernando Salles, “Panel Discussion: The Evolution of Life-Cycle Management as the Driving Force behind Drug Delivery. What Does the Future Look Like?” Invited for Panel

Development and Regulation of Abuse-Deterrent Opioid Medications – Public Meeting, Silver Spring, MD, October 2014, Stephen W. Hoag, “Excipient properties affecting the mechanical performance of abuse deterrent formulations” Invited Seminar

2014 GPhA Fall Technical Conference, North Bethesda, MD, October 2014, Stephen W. Hoag, “The Pharmaceutical Excipients Database Hosted on PharmaHUB” Invited Seminar

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The Cortona Conference: Advances in Pharmaceutical Innovation and Manufacturing Control, Cortona, Italy, September 2014, Stephen W. Hoag, “The Use of NIR Spectroscopy and Process Environmental Data to Monitor the Coating of Multiparticulate Beads in a Fluid Bed” Invited Seminar

Zhejiang University, Hangzhou, China, Hangzhou, China, June 2014, Stephen W. Hoag, “The Research infrastructure and Education System at American Universities” Invited Seminar

2014 International Symposium on Trends in Advanced Pharmaceutical Manufacturing, Hangzhou, China, June 2014, Stephen W. Hoag, “The development of control strategies for the fluid bed coating of multiparticulate beads” Invited Seminar

Generic Drug User Fee Amendments of 2014; Regulatory Science Initiatives Part 15 Public Meeting; Request for Comments, FDA, Silver Spring, MD, May 2014, Stephen W. Hoag, “Raw Material and Manufacturing Factors Affecting the Quality of Generic Pharmaceutical Products”

Colorcon Lunch and Learn Seminar, Harleysville, PA, April 2014, Stephen W. Hoag, “The development of control strategies for coating multiparticulate beads with ethyl cellulose polymers” Invited Seminar

IFPAC Annual Meeting, Arlington VA, January 2014, S. Mamedov, T. Wang, S. Hoag, “Determination of magnesium concentration in commercial magnesium stearate samples using XRF spectroscopy” Invited Seminar

IFPAC Annual Meeting, Arlington VA, January 2014, Stephen W. Hoag and Raafat Fahmy, “Real Time Release Testing of Ciprofloxacin HCl Modified Release Capsules. Case Study” Invited Seminar

SCIX Annual 2013, Milwaukee, WI, September 2013, Stephen W. Hoag, “Developing the Control Strategy for Real Time Release Testing of Ciprofloxacin HCl Controlled Release Multiparticulate Beads” Invited Seminar

CRS Annual Meeting, Controlled Release Dosage Forms and Product Development Strategy for Expected New Regulatory Trends Workshop, Honolulu, HI, July 2013, Stephen W. Hoag, “The Use of Spectroscopic Methods for the Examination of the Solid State of Controlled Release Polymers”

Generic Drug User Fee Amendments of 2012; Regulatory Science Initiatives Part 15 Public Meeting; Request for Comments, FDA, Silver Spring, MD, June 2013, Stephen W. Hoag, “Quality Challenges and Research Needs in the Generic Pharmaceutical Industry”

Eudragit® Advanced Workshop, Piscataway, NJ, June 2013, Stephen W. Hoag, “Developing QbD and PAT Systems for the Monitoring of EUDRAGIT® Polymer Coatings” Invited Seminar

UMB CERSI Meeting Control Strategies for Pharmaceutical Manufacturing: Real Time Release Testing and Design Space Determination, Baltimore, MD, May 2013, Stephen W. Hoag, “Developing the Control Strategy for Pharmaceutical Manufacturing Across Scales of Manufacturing” Meeting organizer and presenter

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GSK Inc., King of Prussia, PA, May 2013, Stephen W. Hoag, "Spectroscopic studies at the University of Maryland" Invited Seminar

NIH/NCATS, Rockville, MD, December 2012, Stephen W. Hoag, "Drug Development Capabilities and Studies at the University of Maryland GMP Facility" Invited Seminar

SCIX Annual 2012, Kansas City, MO, October 2012, Stephen W. Hoag, Ravi Kona, Bhavesh H. Kothari, Raafat Fahmy, "Near Infrared Monitoring of the State of Fluid Bed Processes" Invited Seminar

NIPTE 2012 Research Conference: Understanding Excipient Performance – Key to Successful QbD Formulation, White Oak, Silver Spring, MD, June 2012, Stephen W. Hoag, "NIPTE-FDA Project on Excipients" Conference Chair and meeting organizer

2012 Northeast User Meeting and Technical Seminar, Somerset, NJ, April 2012, Stephen W. Hoag, "The Use of NIR to Monitor the State of Fluid Bed Processes" Invited Seminar

AAPS Workshop on Lipid-based Delivery for Improving Drug Absorption: Mechanistic Understanding and Practical Approaches, Baltimore, MD, April 2012, Stephen W. Hoag, "Hot Melt Extrusion using Lipids" Invited Seminar

Eudragit® Advanced Workshop, Malvern, PA, April 2012, Stephen W. Hoag, "Methods for Monitoring of Functional Film Coat Curing: EUDRAGIT® Case Studies" Invited Seminar

School of Pharmacy, University of Kentucky, Lexington, KY, February 2012, Stephen W. Hoag, "The Use of Spectroscopic Methods to Monitor Film Coat Formation" Invited Seminar

Merck Inc., West Point, PA, February 2012, Stephen W. Hoag, "NIPTE/FDA Excipient CQAs Database Project" Invited Seminar

IFPAC Annual Meeting, Baltimore MD, February 2012, Stephen W. Hoag, "Examination of Excipient Variability via Spectroscopic Methods: Advantages and Limitations" Invited Seminar and session co-organizer

DFE Pharma Expert Board Meeting, Paris France, December 2011, Stephen W. Hoag, "Current Trends in Excipient Functionality" Invited Seminar

AAPS Annual Meeting and Exposition, Washington, DC, October 2011; Stephen W. Hoag. "Select Topics in Excipient Research" IPEC Shangraw Award speech.

ExActCoat Educational Workshop, Northvale, NJ, September 2011, Stephen W. Hoag, "Immediate Release Color Coatings" Invited Seminar

FDA Regional Office, Saint Louis, MO, August 2011, Stephen W. Hoag, "The Effect of Excipient Variability on the Identification of Bulk Excipients using NIR and Raman, and the Application of Database Techniques for Calibration Model Transfer to Portable Spectrometers" Invited Seminar

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Roquette® University Educational Courses, Chicago, IL, August 2011, Stephen W. Hoag, “Excipient Variability and Functionality Testing from a QbD Perspective and the Application of Database” Invited Seminar

Excipient-Fest Americas, Baltimore, MD, May 2011, Stephen W. Hoag, “Excipient Variability and Functionality Testing” Key Note Speaker and panelist

DMV - Fonterra Expert Board Meeting, London England, December 2010, Stephen W. Hoag, “Current Excipient Trends” Invited Seminar

USP Workshop on: Particle Size Particle Detection and Measurement, USP Headquarters, Rockville, MD, December 2010, Stephen W. Hoag, “Desirable Formulations Properties and Delivery Strategies API for Dry Systems” Invited Seminar

Bend Research Inc., Bend, Oregon, July 2010, Raafat Fahmy and Stephen W. Hoag, “Risk Analysis in QbD Applications” Invited Seminar

37th Annual Meeting and Exposition of the Controlled Release Society, Portland, OR, July 2010, Stephen W. Hoag, “Tablet and Capsule Manufacturing Roundtable” Invited Seminar

Republic Polytechnic Hot melt Extrusion Workshop, Singapore, June 2010, Stephen W. Hoag, “The use of polymeric materials to enhance the solubility of poorly soluble drugs: the characterization of the drug in polymeric materials” Invited Seminar

Eudragit® Workshop for Advanced Users, Cincinnati, OH, May 2010, Stephen W. Hoag, “QbD: Case Study with EUDRAGIT®” Invited Seminar

Eudragit® Workshop for Advanced Users, Malvern, PA, April 2010, Stephen W. Hoag, “QbD: Case Study with EUDRAGIT®” Invited Seminar

AHI Quality by Design (QbD) Workshop, Arlington, VA, October 2009, Stephen W. Hoag, “New Technology for In-Process Control, Online Monitoring, and Chemometric Models” Invited Seminar

51st Annual International Industrial Pharmaceutical Research & Development Conference “Bridging Material and Product Quality in Developing Tablet Dosage Forms” Merrimac, WI, June 2009, Stephen W. Hoag, “Excipient and Powder Characterization” Invited Seminar

AAPS/CRS Workshop on Critical Variables in the In Vitro and In Vivo Performance of Parenteral Sustained Release Products, GA, November 2008, Stephen W. Hoag, “Developing Performance Specifications and Design Space” Invited Seminar

First Asian Pharmaceutical Technologies Arden Conference and Annual Meeting of the Pharmaceutics Committee of CPA: Particle and Powder Technologies for Solid Dosage Forms, Beijing, China, October 2008, Stephen W. Hoag, “Mechanistic Understanding of Powder Compaction and Granulation” Invited Seminar and member of organizing committee

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College of Notre Dame of Maryland, Department of Chemistry Seminar, Baltimore, MD, October 2008, Stephen Hoag, "The Application of NIR Spectroscopy and Chemometric Modeling Techniques in the Pharmaceutical Industry: New Paradigms for Quality Control in Pharmaceutical Manufacturing" Invited Seminar

FIP 2008 Congress Pre-Satellite Workshop Meeting the Challenges of Pharmaceutical Innovation and Quality by Design in the 21st Century: Implementation of PAT, Basel Switzerland, August 2008, Stephen Hoag, "PAT for Animal Products: Applications of NIR Spectroscopy for the Monitoring and Study of Formulation and Process Parameters that Impact Sustained Release Tablet Coat Curing" Invited Seminar

The Council on Pharmaceutical Quality and the Manufacturing Science Work Group FDA, Silver Spring, MD, April 2008, Raafat Fahmy, Stephen Hoag, Marilyn Martinez and Dennis Bensley, "Quality by Design: Application of NIR Spectroscopy for Formulation Development of Sustained Release Dosage Forms" Invited Seminar

Forty-Third Annual Pharmaceutical Technologies Arden Conference: Particle and Powder Technologies for Solid Dosage Forms, West Point, NY, February 2008, Stephen W. Hoag, "Mechanisms of Powder Compaction and Granulation" Member of organizing committee

Third Eudragit[®] Advanced Workshop, New Brunswick, NJ, October 2007, Stephen W. Hoag, "Compaction Properties of Eudragit[®] Polymers" Invited Seminar

EntreMed Inc., Rockville, MD, November 2006; Stephen W. Hoag, "The Compaction Properties of pH Sensitive Eudragit Polymers" Invited Seminar

ISPE Annual Meeting, Orlando Florida, November 2006; Stephen W. Hoag, "Prediction of Curing Endpoint for Sustained Release Polymer Products using NIR Spectroscopy and Multivariate Analysis" Invited Seminar

Second Eudragit[®] Advanced Workshop, New Brunswick, NJ, October 2006, Aditya Tatavarti and Stephen W. Hoag, "Compaction Properties of Eudragit[®] Polymers" Invited Seminar

Garnet E. Peck Symposium In Industrial Pharmacy: Fourth Annual Symposium Advances in Compaction Research in Pharmaceuticals, Lafayette, IN, September 2006, Stephen W. Hoag, "Evaluation of the Deformation Behavior of Methacrylic Acid Copolymers Using a Compaction Simulator" Invited Seminar

Foss 2006 Users Meeting Seminar " Seminar, Somerset, NJ, September 2006, Simin H. Tabasi Raafat Fahmy and Stephen W. Hoag, "The application of NIR spectroscopy to the study of pharmaceutical tablet film coating and film formation" Invited Seminar

The MIT Enterprise Forum, Arlington, VA, February 2006; Stephen W. Hoag, "Embedding Covert Anticounterfeit Spectral Features into Formulations to Authenticate Pharmaceutical Products" Invited Presentation

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32nd FACCS Annual Meeting, Quebec City, Canada, October 2005; Stephen W. Hoag, Simin H. Tabasi, Katherine Bakeev and Raafat Fahmy, "Instrumentation Factors and Sample Presentation Effects on Calibration Transfer and Direct Prediction of Drug Content using Different Near Infrared Spectrometers" Invited Presentation

1st Eudragit[®] Advanced Workshop, New Brunswick, NJ, October 2005, Aditya Tatavarti and Stephen W. Hoag, "Compaction Properties of Eudragit[®] Polymers" Invited Seminar

BioAlliance Breakfast Series, Rockville, MD, May 2005; James Polli and Stephen Hoag, "Embedding Covert Anticounterfeit Spectral Features into Formulations to Authenticate Pharmaceutical Products" Invited Presentation

31st FACCS Annual Meeting, Portland, OR, October 2004; James Polli and Stephen Hoag, "Embedding Covert Anticounterfeit Spectral Features into Pharmaceutical Formulations to Authenticate Pharmaceutical Products" Invited Presentation

Foss 2004 Users Meeting and Technical "PAT" Seminar, Somerset, NJ, May 2004, James E. Polli and Stephen W. Hoag, "The Application of NIR to Combat Counterfeit Drugs" Invited Seminar

Novartis, East Hanover, NJ, April 2004, Stephen W. Hoag, "The Application of Plasticity Models to the Consolidation of Pharmaceutical Powders: a Work in Progress" Invited Seminar

Fort Dodge Inc., Princeton, NJ, December 2003, Stephen W. Hoag, "Assessment of the NIR Technique for Process Analytical Testing of Bolus Dosage Forms" Invited Seminar

Tablet Tech: Advances in Pharmaceutical Formulation and Processes, Princeton, NJ, November 2003, Stephen W. Hoag, "Physical properties of Avicel and Their Effects on Tablet Formulation Development" Invited Seminar

AAPS Annual Meeting and Exposition, Salt Lake City, UT, October 2003; Stephen Hoag, "Die Wall Stress Measurement: From Transducer Design to Data Collection and Interpretation" *PharmSci* (serial on the internet): Available from: <http://www.pharmsci.org/journal> (2003)

Thirty-Fifth Annual Higuchi Research Seminar, Lawrence, KS, May 2002, Stephen W. Hoag, "The Application of Plasticity Models to the Consolidation of Pharmaceutical Powders: a Work in Progress" Invited Seminar

BeneScript Educational Seminar, Orlando, FL, February 2001, Stephen W. Hoag, "Folic Acid Dissolution and Prenatal Nutrition" Invited Seminar

Inhale of Therapeutic Systems, San Carlos, CA, January 2001, Stephen W. Hoag, "Application of Shear Analysis to the Study of Flow and Lubrication in Consolidated Powder Beds" Invited Seminar

Pfizer Inc., Groton, CT, August 2000, Stephen W. Hoag, "Elastic Characterization of Pharmaceutical Materials: From Transducer Design to Data Analysis" Invited Seminar

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Martin-Luther-Universität Halle-Wittenberg, Halle, Germany, April 10, 2000; Stephen W. Hoag, "Application of Shear Analysis to the Study of Flow and Lubrication in Consolidated Powder Beds" Invited Seminar

Office of Dietary Supplements-NIH, Bethesda MD, January 2000; Workshop leader and panel participant for the "Conference/Workshop Bioavailability of Dietary Supplements: Key Issues in Defining the Research Agenda"

Gilead Sciences, Foster City, CA, November 20, 1998; Stephen W. Hoag, "Application of Shear Cell Analysis to Pharmaceutical Formulation Development" Invited Seminar

Martin-Luther-Universität Halle-Wittenberg, Halle, Germany, June 4, 1998; Stephen W. Hoag, "Education at the University of Maryland and in the United States of America" Invited Seminar

Martin-Luther-Universität Halle-Wittenberg, Halle, Germany, June 4, 1998; Stephen W. Hoag, "Characterization and Prediction of Calcium Alginate Gel Formation" Invited Seminar

University of Connecticut, Storrs, CT, April 23, 1998; Stephen W. Hoag "The Integrated Science and Therapeutics Curriculum at the University of Maryland School of Pharmacy" Invited Seminar

University of Connecticut, Storrs, CT, April 23, 1998; Stephen W. Hoag, "Characterization and Prediction of Calcium Alginate Gel Formation" Invited Seminar

FMC Corporation, Princeton, NJ, January 22, 1997; Stephen W. Hoag, "Tablet Press Instrumentation Design Using Finite Element Modeling" Invited Seminar

SmithKline Beecham Pharmaceuticals, King of Prussia, PA, October 22, 1996; Stephen W. Hoag, "Tablet Press Instrumentation Design Using Finite Element Modeling" Invited Seminar

Scanning Microscopy 1996 Meeting, Bethesda, MD, May 1996; Stephen W. Hoag, and Shawna Inoue "Interfacial Barriers to Mass Transfer in Calcium Alginate Gels" Invited Seminar

FDA Baltimore District Pre-approval Training Course, Baltimore, MD, January 17, 1996; Stephen W. Hoag, "Tablet Compaction" Invited Seminar

Eli Lilly and Co., Indianapolis, IN, November 17, 1995; Stephen W. Hoag, "Finite Element Modeling in Tablet Press Instrumentation Design" Invited Seminar

Scanning Microscopy 1995 Meeting, Houston, TX, May 1995; Stephen W. Hoag, and Shawna Inoue "Characterizing Heterogeneity in Calcium Alginate Gels: Measurement of Gel Formation Rate." Invited Seminar

Eli Lilly and Co., Indianapolis, IN, June 20, 1994; Stephen W. Hoag, "Deformation of the Stokes B2 Rotary Tablet Press: Quantitation and Influence on Tablet Compaction" Invited Seminar

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24th Annual Meeting of the Fine Particle Society, Chicago, IL, August 1993; Stephen W. Hoag, "Characterizing Drug Release from Calcium Alginate Hydrogels." Invited Seminar

Third Annual AAPS Meeting and Exposition, Orlando, Florida, November 1988; Stephen W. Hoag and Edward G. Rippie, "Evolution of Viscoelastic Tablet Structure During Compaction" *Pharm. Res.* **5**:S236(1988).

19th Annual Pharmaceutical Graduate Student Research Meeting, University of Michigan, Ann Arbor, Michigan, June 1987; Stephen W. Hoag and Edward G. Rippie, "Evolution of Viscoelastic Tablet Structure During Compression."

17th Annual Pharmaceutics Graduate Student Research Meeting, University of Kentucky, Lexington, Kentucky, June 1985, Stephen W. Hoag and Edward G. Rippie, "Acquisition of Stress/Strain Data in Tableting."

SHORT COURSES TAUGHT

University of Maryland, School of Pharmacy, Baltimore MD, Oct 2018, "Tablet and Capsules Hands-on Short Course" Organized and gave 5 day short course 17 lectures 10 laboratory exercises.

University of Maryland, School of Pharmacy, Baltimore MD, May 2018, "Tablet and Capsules Hands-on Short Course" Organized and gave 5 day short course 17 lectures 10 laboratory exercises.

University of Maryland, School of Pharmacy, Baltimore MD, October 2017, "Tablet and Capsules Hands-on Short Course" Organized and gave 5 day short course 17 lectures 10 laboratory exercises.

University of Maryland, School of Pharmacy, Baltimore MD, May 2017, "Tablet and Capsules Hands-on Short Course" Organized and gave 5 day short course 17 lectures 10 laboratory exercises.

University of Maryland, School of Pharmacy, Baltimore MD, October 2016, "Tablet and Capsules Hands-on Short Course" Organized and gave 5 day short course 17 lectures 10 laboratory exercises.

University of Maryland, School of Pharmacy, Baltimore MD, April 2016, "Tablet and Capsules Hands-on Short Course" Organized and gave 5 day short course 17 lectures 10 laboratory exercises.

University of Maryland, School of Pharmacy, Baltimore MD, October 2015, "Tablet and Capsules Hands-on Short Course" Organized and gave 5 day short course 17 lectures 10 laboratory exercises.

University of Maryland, School of Pharmacy, Baltimore MD, March 2015, "Tablet and Capsules Hands-on Short Course" Organized and gave 5 day short course 17 lectures 10 laboratory exercises.

University of Maryland, School of Pharmacy, Baltimore MD, October 2014, "Tablet and Capsules Hands-on Short Course" Organized and gave 5 day short course 17 lectures 10 laboratory exercises.

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17th International Diffuse Reflectance Conference (IDRC), Chambersburg Meeting, Chambersburg PA, August 2014, "Chemometrics for Pharmaceutical Scientists" Organized a 1 day short course 4 hrs lecture.

University of Maryland, School of Pharmacy, Baltimore MD, June 2014, "Chemometrics for Pharmaceutical Scientists" Organized a 4 day short course 13 lectures 2 laboratory exercises.

University of Maryland, School of Pharmacy, Baltimore, October 2013, "Tablet and Capsules Hands-on Short Course" Organized and gave 5 day short course 17 lectures 10 laboratory exercises.

Amgen Inc., Thousand Oaks CA, December 2010, "Tablet Production & Formulation Short Course" Gave 7 hrs of lecture.

Office of Generic Drugs (OGD), FDA, Rockville MD, March - May 2010, "Excipients and Excipient Functionality" Gave 22 hrs of lecture with Larry Augsburger.

University of Wisconsin, Department of Engineering Professional Development, Las Vegas NV, April 2010, "Tableting and Capsule Manufacturing: Introduction and Update for Competitive Organizations" Gave 6 hrs of lecture.

Center for Veterinary Medicine FDA, Rockville MD, November 2009, "Excipients and Excipient Functionality" Gave 3 hrs of lecture.

Center for Veterinary Medicine FDA, Rockville MD, June 2009, "Tablet Production: Granulation, Compression & Dissolution" Gave 6 hr demonstration.

Bristol-Meyers Squib, New Brunswick, NJ, June 2008, "Tablet Production & Formulation Short Course" Gave 6 hrs of lecture.

Center for Veterinary Medicine FDA, Rockville MD, May 2008, "Emerging Technology Series - Overview of Spectroscopic Chemistry" Gave 3 hrs of lecture.

University of Wisconsin, Department of Engineering Professional Development, Las Vegas NV, April 2008, "Tableting and Capsule Manufacturing: Introduction and Update for Competitive Organizations" Gave 5 hrs of lecture.

Center for Veterinary Medicine FDA, Rockville MD, March 2007, "Emerging Technology Series - Chemometrics" Gave 5 hrs of lecture.

University of Wisconsin, Department of Engineering Professional Development, Las Vegas NV, March 2007, "Tableting and Capsule Manufacturing: Introduction and Update for Competitive Organizations" Gave 5 hrs of lecture.

University of Wisconsin, Department of Engineering Professional Development, Las Vegas NV, March 2006, "Tableting and Capsule Manufacturing: Introduction and Update for Competitive Organizations" Gave 5 hrs of lecture.

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University of Maryland, Department of Pharmaceutical Sciences, Atlanta, GA, August 2005, "Solvay / University of Maryland School of Pharmacy Tablet and Capsule Formulation Workshop" Gave 8 hrs of lecture.

Center for Veterinary Medicine FDA, Rockville MD, April 2005, "Drug Development and Manufacturing Series" Gave 4 hrs of lecture.

University of Wisconsin, Department of Engineering Professional Development, Las Vegas NV, January 2005, "Tableting and Capsule Manufacturing: Introduction and Update for Competitive Organizations" Gave 5 hrs of lecture.

University of Maryland, Department of Pharmaceutical Sciences, Richmond, VA, January 2005, "Wyeth / University of Maryland School of Pharmacy Tablet and Capsule Formulation Workshop" Gave 8 hrs of lecture.

University of Maryland, Department of Pharmaceutical Sciences, New Brunswick, NJ, August 2004, "BMS / University of Maryland School of Pharmacy Tablet and Capsule Formulation Workshop" Gave 4 hrs of lecture.

Center for Veterinary Medicine FDA, Rockville MD, May 2004, "Drug Development and Manufacturing Series" Gave 4 hrs of lecture.

University of Wisconsin, Department of Engineering Professional Development, Las Vegas NV, February 2004, "Tableting and Capsule Manufacturing: Introduction and Update for Competitive Organizations" Gave 5 hrs of lecture.

University of Maryland, Department of Pharmaceutical Sciences, New Brunswick, NJ, March 2003, "BMS / University of Maryland School of Pharmacy Tablet and Capsule Formulation Workshop" Gave 4 hrs of lecture.

University of Wisconsin, Department of Engineering Professional Development, Philadelphia PA, February 2003, "Tableting and Capsule Manufacturing: Introduction and Update for Competitive Organizations" Gave 5 hrs of lecture.

University of Wisconsin, Department of Engineering Professional Development, Philadelphia PA, February 2002, "Tableting and Capsule Manufacturing: Introduction and Update for Competitive Organizations" Gave 5 hrs of lecture.

Silpakorn University, School of Pharmacy, Nakhonpathom Thailand, June 2001, Gave lectures on Drug Development, Drug Product Testing & Regulation in the USA, Gave 12 hrs of lecture.

University of Wisconsin, Department of Engineering Professional Development, San Francisco, CA, January 2001, "Tableting and Capsule Manufacturing: Introduction and Update for Competitive Organizations" Gave 5 hrs of lecture.

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University of Wisconsin, Department of Engineering Professional Development, Philadelphia PA, January 2000, "Tableting and Capsule Manufacturing: Introduction and Update for Competitive Organizations" Gave 5 hrs of lecture.