Jesse L. Panger

Ph.D.

Staff Consultant

Dr. Jesse Panger is a highly experienced organic chemist with a specialization in drug formulations, organic synthesis, and analytical chemistry. He has extensive experience performing analytical testing of a wide array of substances, interpreting data, and detailing those findings in reports. These reports have been used by the Food and Drug Administration (FDA) and the pharmaceutical industry to determine the viability of a drug in the setting of a Good Manufacturing Practices/Good Laboratory Practices (GMP/GLP) environment. In the case of failed quality checks for active pharmaceutical ingredients (APIs), Dr. Panger has performed extensive investigations including root cause analysis, outlined corrective and preventive actions, and developed new protocols to overcome product failures. Other areas of specialization include Compound Characterization, Chemical Analysis, Poison/Contaminants, Scanning Electron Microscopy (SEM), and Polymeric Evaluations.

Dr. Panger possesses a broad general chemistry knowledge that is invaluable to understanding the interaction of materials on a molecular level. His expertise has been called upon to review and provide feedback for scholarly articles related to chemistry. Dr. Panger has a Doctorate in Organic Chemistry, and a B.S. in Chemistry, with special interests in mycology and fermentation sciences.

Education

Ph.D., Organic Chemistry, University of Illinois at Urbana-Champaign, 2023

B.S., Chemistry with Honors, University of Wisconsin-Madison, 2015

Academic Honors

Drickamer Research Fellowship, 2020

J. C. Martin Memorial Student Travel Award, 2019

Lester E. and Kathleen A. Coleman Fellowship, 2019

Dr. Harold R. Snyder Fellowship, 2018

Contact Information

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ESi Seattle

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Seattle, WA 98108

Areas of Specialization

- Chemical Analysis
- Chemical Synthesis
- Peer-review of technical documentation
- Good Manufacturing Practices

Professional Affiliations

American Chemical Society

- Member

National Association of Fire Investigators

- Member

Position Held

ESi (Engineering Systems Inc.) Seattle, WA

Staff Consultant, 2023 – Present

University of Illinois at Urbana-Chamoaign, Urbana, IL

Research Assistant, 2019 - 2023

Teaching Assistant, 2017 - 2019

Pharmaceutical Product Development, Middleton, WI

Assistant Scientist, 2017

Assistant Scientist, 2015 - 2017

University of Science and Technology, Hefei, China

Visiting Scientist, 2015

Publications & Presentations

"Enantioselective Inter- and Intramolecular Sulfenofunctionalization of Unactivated Cyclic and (Z)-Alkenes." A. Matviitsuk; J.L. Panger; S. E. Denmark, *ACS Catal*. 2022, *12*, 7377 – 7385.

"Catalytic, Enantioselective Sulfenofunctionalization of Alkenes: Development and Recent Advances." A. Matviitsuk; J. L. Panger; S. E. Denmark, *Angew. Chem. Int. Ed*. 2020, *59*, 19796 – 19819.

"Enantioselective Synthesis of γ-Lactams by Lewis Base Catalyzed Sulfenoamidation of Alkenes." J. L. Panger; S. E. Denmark, *Org. Lett*. 2020, *22*, 2501 – 2505.

- Featured as the cover art for Organic Letters.

"Enantioselective, Lewis Base-Catalyzed Carbosulfenylation of Alkenylboronates by 1,2- Boronate Migration." Z. Tao.; K. A. Robb; J. L. Panger; S. E. Denmark, *J. Am. Chem. Soc.*, 2018, *140*, 46, 15621 – 15625.

"Improved Supported Metal Oxides for the Oxidative Dehydrogenation of Propane." J. T. Grant; A. M. Love; C. A. Carrero; F. Huang; J. Panger; R. Verel; I. Hermans, *Top Catal*, 2016,*59*, 1545 – 1553.

“Enantioselective, Lewis Base-Catalyzed Sulfenofunctionalization of Alkenes” by J. L. Panger, Proceedings of the Abbvie Scholars Symposium, 2021.

“Enantioselective, Lewis Base-Catalyzed Sulfenofunctionalization of Alkenes” by J. L. Panger, Proceedings of the Graduate Research Symposium, 2021.

Exemplars Projects

Pre-Clinical Drug Viability Assessment

During the water content analysis (by Karl Fischer Titration) for a pre-clinical drug candidate, the moisture content was higher than tolerances allow which may lead to poorer drug interactions in the body. Rapid Root Cause Analysis (RCA) was performed to ascertain the reason for the high moisture content. It was found that a change in packaging and applied laminate did not retain its shape under a high humidity/high temperature environment. Replacing the laminate with a more robust material allowed for the extended shelf life of the drug by exclusion of moisture.

New Packaging Validation

Particle size analysis was performed on an FDA-approved ophthalmic solution under new packaging conditions to determine the aggregation of insoluble additives over time. Repeated failures were obtained starting at the 12-month time point where larger than expected particles were found. Different formulations and storage conditions were tested to determine viability. Ultimately, through working with the client and regulating bodies, a shelf-life of no longer than 1 year was prescribed.