

# CHICAGOLAND PHARMACEUTICAL DISCUSSION GROUP

Affiliated with the American Association of Pharmaceutical Scientists

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## **PROGRAM: DIGITAL TWINS OF DRUG PRODUCTS: A PATHWAY FOR IN SILICO DISSOLUTION AND QUALITY BY DESIGN DECISION MAKING**

**DATE: THURSDAY, JANUARY 25, 2024**

**SPEAKER: DR. SHAWN ZHANG AND MR. PHIL YAWMAN - DigiM**

In drug development, digital twins are often focused on process modeling and plant level operations. Digital transformation of the drug product itself, however, is a significant gap in therapeutic design. This talk will explore how high-resolution imaging techniques and AI analysis can transform drug products into reusable digital twins, and subsequently speed up formulation and manufacturing parameter optimization in silico or in vitro informed by in silico. In particular, the use of microscopic analysis to identify critical quality attributes (CQAs) and critical process parameters (CPPs) will be reviewed. This presentation will share case studies from the industry and the regulatory agencies, demonstrating how digital twins have been applied in quality by design decisions. Generative AI research for designing new formulations will be discussed. Finally, the possibilities of in silico dissolution and disintegration from microstructural data will be explored.

Dr. Zhang is the founder and managing director of DigiM. He graduated from Rutgers University with a Ph.D. in Computational Physics and a minor in Computer Engineering. Before starting Boston-based DigiM, Dr. Zhang held senior positions at leading CAE software company Fluent (now Ansys) and leading electron microscopy company FEI (now ThermoFisher). Dr. Zhang and his DigiM team are passionate about the combined power of experimental data and *in silico* simulations. With over hundreds of publications, patents, and software products, he leads DigiM to becoming a trusted partner in the characterization, institutionalization, and democratization of microstructure science across multiple industries. Learn more about Dr. Zhang's work in [Google Scholar](#) or [LinkedIn](#).

Mr. Yawman is a lead product specialist at DigiM specializing in microstructure characterization of oral solid dosage forms with a focus on amorphous solid dispersions. He has a background in imaging ranging from diagnostic medical imaging in the field of dentistry to nanoscale imaging and microstructure characterization in the pharmaceutical industry. Mr. Yawman is focused on the application of correlative image analysis to the optimization of pharmaceutical formulation, design, and performance assessment. He holds B.S. degrees in biomedical engineering from the University at Buffalo and biology from the University at Albany.

**TIME: 5:30 PM – SOCIAL HOUR**

**6:00 PM – DINNER**

**7:00 PM – MEETING**

**PLACE: JAMESON'S CHARHOUSE**

**151 E TOWNLINE RD, VERNON HILLS**

**COST: \$55.00**

**REGISTER AT [cpdgmeeting@gmail.com](mailto:cpdgmeeting@gmail.com)**  
**ZELLE PAYMENT AT [cpdg2022@gmail.com](mailto:cpdg2022@gmail.com)**

**THE DINNER MEAL CHOICES ARE THE FOLLOWING:**

1. MACADAMIA CRUSTED TILAPIA – WITH LEMON BUTTER SAUCE
2. LEMON PEPPER CHICKEN – SAUTÉED IN WHITE WINE, GARLIC SAUCE & SERVED WITH RICE AND VEGETABLES
3. VEGETABLE KABOBS (GREEN PEPPER, ONION, MUSHROOM AND TOMATO) – SERVED WITH RICE (VEGETARIAN)

**WHEN REGISTERING, PLEASE INDICATE YOUR SELECTED DINNER MEAL:**

Meal Choice: Fish, Chicken, or Vegetarian	First Name	Sur (Last) Name	Company

**E-MAIL WILL BE SENT  
CPDG ACCEPTS CASH, CHECKS (PERSONAL OR COMPANY) OR THROUGH ZELLE  
FIRST FIVE STUDENTS ARE FREE  
PLEASE MAKE RESERVATIONS EARLY NO-SHOWS WILL BE BILLED ACCORDINGLY  
MORE INFORMATION CAN BE FOUND ON THE CPDG WEBPAGE:**

<https://aaps-cpdg.org/>

**Firm Registration Deadline of 12:00 p.m., Tuesday, January 23, 2024**

**DIRECTIONS TO THE JANUARY 25, CPDG MEETING AT JAMESON'S CHARHOUSE  
151 E TOWNLINE RD, VERNON HILLS, IL**

- EXIT I-94 AT TOWN LINE RD. (60)
- HEAD WEST ON TOWN LINE ROAD (60) PAST MILWAUKEE AVE (21)
- RESTURANT WILL BE ON THE LEFT-HAND SIDE OF THE ROAD

