

IPPH NEWSLETTER

INDUSTRIAL & PHYSICAL PHARMACY

PURDUE
COLLEGE OF PHARMACY



GREETINGS
from the department head

Dear Alumni & Friends,

Welcome to our first IPPH e-newsletter! We hope the electronic format brings you IPPH news in a fresh and convenient way...and right to your desktop (as they say)! Click the colorful navigation bar to the right to move to any of the stories, or just scroll down. Click the highlighted "read more" flags to expand the text for more details.

Though we've changed our format, we're still bringing you great news about the latest happenings in the department. This month you'll meet Yang Song, a graduate student in Dr. Steve Byrn's lab, who's working on solid dispersions. You'll find a piece on the crystallization research being conducted by Dr. Tonglei Li and his group. You'll learn about the accomplishments of our faculty and students, and you'll find information on upcoming events, including the [2014 Garnet E. Peck Symposium](#) on March 7 on "Pharmaceutical Manufacturing and Regulatory Issues". Want to learn more about our new e-newsletter? We've included a story on that, too. *(If you still want a print version, please request one. And [let us know](#) your preferred email address so you won't miss a single electronic issue!)*

Thanks for reading...and clicking! Boiler up!

Liz Topp
Dane O. Kildsig Chair and Department Head

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FACULTY HIGHLIGHTS

The FDA awarded **Dr. Liz Topp's** group a new contract to study subvisible protein aggregates. [Read more](#)

Dr. Yoon Yeo authored two of the top ten most-read articles in *Molecular Pharmaceutics* in the second quarter of 2013. [Read more](#)

NIPTE awarded **Dr. Stephen Byrn** a contract to study abuse deterrent formulations. [Read more](#)

The Purdue Research Foundation selected **Dr. Yoon Yeo** for a 2013-2014 International Travel Grant to attend two prestigious international conferences in Seoul, South Korea. [Read more](#)

The National Science Foundation will support **Dr. Rodolfo Pinal's** and Dr. Yuan Yao's (Dept. of Food Science) biopolymer project for three years. [Read more](#)

GRADUATE STUDENT HIGHLIGHTS

Two IPPH graduate students were honored at the November 7 College of Pharmacy's Graduate Student Awards Ceremony: **Kevin Boksa** (Kienly Award) and **Shweta Raina** (Jenkins-Knevel Award). [Read more](#)

Third-year graduate student **Christopher Kulczar** received the department's [Herbert A. Lieberman Award](#) on October 23. Christopher was also featured in *PurdueToday's* ["Five Students Who Move the World Forward"](#) in November. [Read more](#)

In August, senior graduate student **Steven Dale** was selected for a 2013-2014 McKeehan Graduate Fellowship in Pharmacy, which provides stipend support for the next year. [Read more](#)

Lavanya Iyer and **Christopher Kulczar** received 2013-2014 Ronald W. Dollens Graduate Scholarships in the Life Sciences from Purdue University in August, which provides partial stipend support over the fall and spring semesters. [Read more](#)

In August, senior graduate student **Saradha Chandrasekar** received a Baxter Young Investigator Award to stimulate and reward research for critical care therapies and the development of medical products. [Read more](#)

In July, **Haichen Nie** was selected as one of three U.S. Pharmacopeial Global Fellows for 2013-2014, to promote research in areas relating to standards for medicines, foods, and dietary supplements and their use. [Read more](#)



Yang Song uses the Powder Diffraction



SPOTLIGHT
IPPH graduate student

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Yang Song enjoys exploring, which serves him well as he investigates preformulation and formulation in Dr. Stephen Byrn's lab.

Song, a fourth-year graduate student from Weifang in China's Shandong Province, has been at Purdue since his junior year as part of a reciprocal agreement between the China Agricultural University (CAU) in Beijing, and Purdue. CAU sends students here to finish their undergraduate degrees, and some students — like Song — stay on to do their graduate work.

As a Purdue junior, Song did undergraduate research in Dr. Stephen Byrn's lab, then applied to do graduate work in the Department of Industrial and Physical Pharmacy. He started the PhD program in 2010. Song continues to use spray-drying to form solid dispersions to increase solubility of poorly water-soluble drugs and to stabilize amorphous materials. He plans to finish his PhD in December 2014 and would like to work in the U.S. as a formulation scientist.



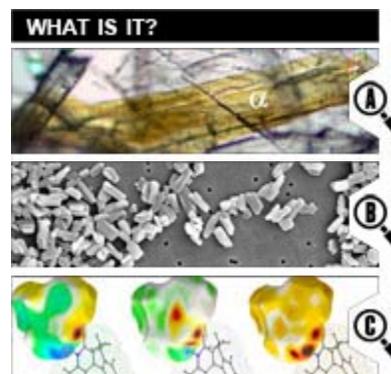
In the summer of 2012, Song drove to California and back for a formulation internship with Genentech. He explored the U.S. by driving a northerly route (Illinois, Iowa, Nebraska, Colorado, Utah & Nevada) to reach California, returning to Purdue via a southerly route (Arizona, New Mexico, Texas, Oklahoma, Missouri & Illinois) in order to see more. He was intrigued by the changing landscape along the way, especially in Colorado, Arizona and Utah, which he found very different from both the Midwest and his home province. Besides traveling, Song likes watching basketball, especially the Miami Heat. He is married to Jiadi Xu, a master's student in biostatistics at the University of Illinois-Chicago.



DR. TONGLEI LI

Crystals are beautiful! Studying them is never short of fascinating. The beauty lies in the structure — whether you can hold a crystal in your hand or observe one under a microscope, its structure is always well-defined. And when the crystal structure becomes available, you can learn so much from it, whether studying its structure-activity relationships, designing principles of novel materials, or predicting its physicochemical properties.

This is how Dr. Tonglei Li's group gets motivated in conducting their research. Always trying to explore molecular mechanisms, Dr. Li and



his students have been developing theoretical and computational methods augmented with experimental analyses for studying organic crystals. Their recent endeavors focus on understanding intermolecular interactions in a crystal with a hope that, one day, they can predict crystal structures and properties by computer. Their particular methods involve computing and analyzing electronic structures of molecules and crystals, and seek the intrinsic linkage between the chemistry of a molecule and the way it interacts with peers. Their group also explores how molecules behave through the nucleation and growth processes in solution or liquid by spectroscopic measurement and molecular modeling and simulation.

While they may satisfy their curiosity by studying solid-state chemistry, Dr. Li's group also looks into new ways to improve drug delivery systems. They have created so-called hybrid nanocrystals that permit cancer treatment and concurrent bioimaging. Creating nanosized, uniform drug crystals is a huge challenge. After several years of painstaking research, they have succeeded in growing nice nanocrystals from solution at the lab scale. They are looking into ways to modify the surface chemistry of the nanocrystals in order to alter biodistribution and reduce systemic toxicities. They are also scaling up their crystallization method so that a larger quantity may be produced.

It is crystal clear that a multidisciplinary approach becomes imperative to appreciate the full intricacy of organic solid materials. As Dr. Li and his students constantly learn new methods and create new materials, they never stop feeling awed by what nature presents.



NEWS & EVENTS department happenings



Purdue PGSRM attendees
(l to r): Zhao-Hui Wang; IPPH reps Jing Ling and Chris Kulczar; Bo Sun; Iris Archer; Jennifer Chough; and Ehab Moussa

PGSRM

The 2013 Pharmaceutical Graduate Student Research Meeting (PGSRM) was held from June 6-8 at the University of Iowa. This year the topic of the meeting was translational research and how to improve and expedite the movement of medicines from bench to bedside. The meeting allowed graduate students to get a chance to present their research to other graduate students in a more informal environment. Also, it allowed graduate students to network with each other and view the types of pharmaceutical research being done in labs throughout the country.

SAVE THE DATE – PECK SYMPOSIUM 2014

The [11th Annual Garnet E. Peck Symposium](#) will be held on March 7, 2014. The topic will be "Pharmaceutical Manufacturing and Regulatory Issues", and is chaired by Professor Tonglei Li. Speakers

will be: Christine Moore and Mansoor Khan (both of the FDA), Allen Templeton (Merck), Paul Luner (Boehringer-Ingelheim), William Randolph (Janssen Supply Group), Nick Cappuccino (Dr. Reddy's Labs), Calvin Sun (UMN), and Larry Augsburg (UMD). Watch our website for more details. *For more information, contact IPPH Communications Coordinator DeEtte Starr at 765-494-1484 or starrd@purdue.edu.*

NEW IPPH ELECTRONIC NEWSLETTER

How did you like our first IPPH e-newsletter? We switched to electronic to:

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- be more environmentally-friendly, and
- save several thousand dollars a year in printing and mailing costs.

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