平成 29 年 9 月 4 日

日本学術振興会
プロセスシステム工学第 143 委員会
委員長　山下　善之

プロセスシステム工学第 143 委員会

第 212 回委員会・平成 29 年度第 3 回研究会 開催通知（案）

（143 委員会ホームページ http://www.pse143.org/）

1. 日 時：2017年10月20日（金）13：00～17：00
2. 場 所：京都大学楽友会館 2F 会議･講演室
   （京都市左京区吉田二本松町／電話：075-753-7603）
   （交通：http://www.kyoto-u.ac.jp/ja/rakuyu/access.html）
3. 委員会：13:00～13:10
4. 研究会：13:10～17:00　“次世代プロセスシステム工学 / Next Generation PSE”

13:10～14:10 **Process Systems Engineering Applications in Advanced Pharmaceutical Manufacturing**

Prof. Marianthi Ierapetritou (Rutgers University)

Abstract:

The pharmaceutical industry has been very innovative and successful in the field of new drug formulation discovery and development. However, this has drawn the focus away from the development of efficient manufacturing methods and process understanding.

Recently, the Food and Drug Administration (FDA) has recognized the deficiencies of pharmaceutical product manufacturing and has launched an initiative for enhancing process understanding through Quality by Design (QbD). The major goals of this effort can be summarized into the development of mechanistic understanding of a wide range of processes; harmonization of processes and equipment; development of technologies to perform online measurements of critical material properties during processing; performance of real-time control and optimization; minimization of the need for empirical experimentation and finally, exploration of process design space. As a result of this effort to change the mindset in pharmaceutical manufacturing, transition of the production from batch to continuous mode is becoming more appealing to the industry.

However, continuous production requires detailed process understanding in terms of the evolution of all critical material properties as a function of its operating parameters and environmental conditions. Once process knowledge is translated into models, process systems engineering tools allows the design, analysis and optimization of continuous integrated processes. The major challenges to achieve this goal, and highlights of the work that has been performed in our lab in the recent years to address these problems will be covered in the talk.

14:10～15:10 **Pharma PSE: Developing Novel Design Methodologies for Pharmaceutical Manufacturing Processes**

Assoc. Prof. Hirokazu Sugiyama (The University of Tokyo)

Abstract:

In the era of population aging, the role of pharmaceuticals is increasingly important. The pharmaceutical industry needs innovative approaches for making rational decisions in all phases from drug discovery to manufacturing, in order to ensure and improve the patient access to drugs. I have been pursuing “Pharma PSE” research for developing novel design methodologies for pharmaceutical manufacturing processes since the transition from the industry to academia in 2013. The aim of the presentation is to summarize the findings so far by showcasing the studies on, among others, waste solvent recovery, continuous tablet manufacturing, and change over operations. In particular, the relevance of alternative generation and modeling, multiobjective evaluation, and decision support functions will be highlighted as the future research opportunities.

15:10～15:30 休憩 / Break

15:30～16:30 **{Process, Medical, Agricultural} Systems Engineering: My Problem-Solving Framework**

Prof. Manabu Kano (Kyoto University)

Abstract:

PSE, Process Systems Engineering, has contributed to the process industry for many years. It has improved the productivity through process analysis, design, control, optimization, and other technologies. Furthermore, PSE has broadened its scope and done remarkable work in various fields. In this talk, I will introduce our recent work in the conventional process systems engineering and then in the emerging, attractive areas, i.e., medical systems engineering and agricultural systems engineering. In particular, I explain our project for improving QoL (Quality of Life) of epilepsy patients by predicting and suppressing seizures, and our project for branding Annou-imo which is a special kind of sweet potato cultivated in Tanegashima-island. A great emphasis is placed on the value of PSE that can provide a unified problem-solving framework.

16:30～17:00 Discussion

＜追記＞

準備の都合がありますので，出欠を１０月６日（金）までに下記 HP にてご回答下さい.

HP URL https://reg31.smp.ne.jp/regist/is?SMPFORM=lgma-phobq-1cb47232aedc896c3e9ca9d2af743dff

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