



**The Chinese University of Hong Kong**  
**Department of Chemistry**  
**Research Seminar Series**

**Speaker:** Professor Yujiro Hayashi  
 Department of Chemistry  
 Tohoku University

**Title:** Organocatalyst in the Total Synthesis

**Date:** June 4, 2018 (Monday)

**Time:** 2:30 p.m.

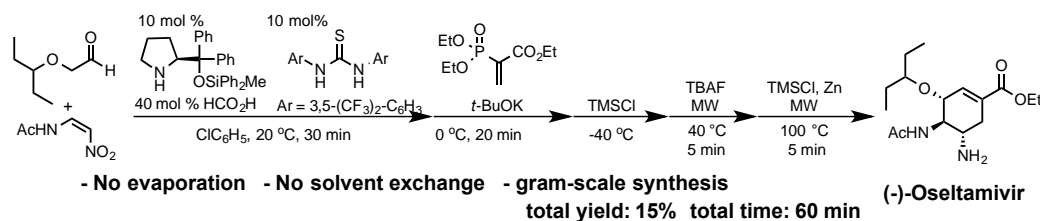
**Venue:** L1, Science Centre

<< Abstract >>

The field of organocatalyst has developed very rapidly since 2000. The organocatalysts is environmentally friendly, and the rigorous exclusion of water and oxygen is not necessary in the experiments. There is no fear that metals are contaminated in the final product. Because of these strong points, organocatalysts have been used in the synthesis of natural products and drugs. Our group has developed diphenylprolinol silyl ether,<sup>[1]</sup> which is an effective organocatalyst known as “Jorgensen-Hayashi” catalyst.

On the other hand, one-pot operations are an effective method for both carrying out several transformations and forming several bonds in a single-pot, while at the same time cutting out several purifications, minimizing chemical waste generation, and saving time. Thus, a one-pot reaction can be not only efficient, but also green and environmentally friendly, and “pot-economy” should be considered in planning a synthesis.<sup>[2]</sup>

In this lecture, the utility of “Jorgensen-Hayashi” catalyst and the concept of “pot economy” will be explained with its application of the 60 minutes, one-pot total synthesis of (-)-oseltamivir, influenza drug, for “time-economy.”<sup>[3]</sup>



### References

1. Y. Hayashi, H. Gotoh, T. Hayashi, M. Shoji, *Angew. Chem. Int. Ed.* **2005**, *44*, 4212.
2. Y. Hayashi, *Chem. Sci.* **2016**, *7*, 866.
3. Y. Hayashi, S. Ogasawara, *Org. Lett.* **2016**, *18*, 3426.



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**Speaker:** Professor Yujiro Hayashi  
 Department of Chemistry  
 Tohoku University

**Title:** Pot Economy in the Synthesis of Prostaglandin and Estradiol Methyl Ether

**Date:** June 7, 2018 (Thursday)

**Time:** 10:30 a.m.

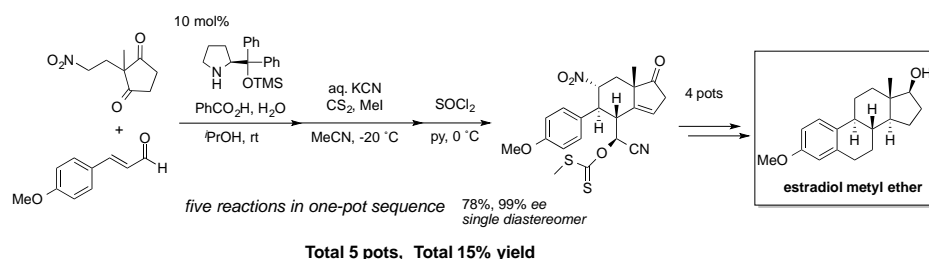
**Venue:** L5, Science Centre

< Abstract >

The one-pot synthesis of a target molecule in the same reaction vessel is an efficient approach in synthetic organic chemistry.<sup>[1]</sup> Our group has been investigating the syntheses of biologically active molecules via small number of pots.

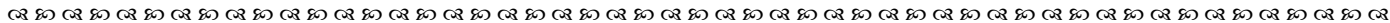
The prostaglandins are known to act as local hormones, controlling a multitude of important physiological properties in only trace amounts, and some of their derivatives are important to human beings as useful medicines. We have accomplished the three pot synthesis of PGE<sub>1</sub> methyl ester using organocatalyst mediated formal 3+2 cycloaddition as a key step.<sup>[2]</sup> Moreover, we found the oxidative Nef reaction using molecular oxygen during its synthesis.<sup>[3]</sup> The mechanistic investigations of this Nef reaction will also be presented.

Recent five pot synthesis of estradiol methyl ether using domino reaction of diphenylprolinol silyl ether mediated Michael reaction and intramolecular aldol reaction as a key step will also be presented.<sup>[4]</sup>



**References**

1. Y. Hayashi, *Chem. Sci.* **2016**, 7, 866.
2. Y. Hayashi, S. Umemiya, *Angew. Chem. Int. Ed.* **2013**, 52, 3450
3. S. Umemiya, K. Nishino, I. Sato, Y. Hayashi, *Chem. Eur. J.* **2014**, 20, 15753.
4. Y. Hayashi, S. Koshino, K. Ojima, E. Kwon, *Angew. Chem. Int. Ed.* **2017**, 56, 11812.



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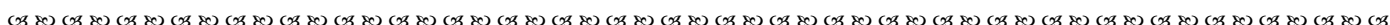
**Speaker:** Professor Shigehiro Yamaguchi  
Research Center of Materials Science and  
Department of Chemistry  
Nagoya University

**Title:** Main-Group Strategy toward NIR and  
Photostable Fluorescent Dyes

**Date:** June 15, 2018 (Friday)

**Time:** 4:30 p.m.

**Venue:** L1  
Science Centre



ALL ARE WELCOME

Contact Person:  
Prof. Zuowei Xie



*The Chinese University of Hong Kong*  
*Department of Chemistry*  
*Research Seminar Series*

**Speaker:** (1) Professor Xiangliang Yang

(2) Professor Zifu Li

College of Life Science and Technology

Huazhong University of Science and Technology

**Title:** (1) Advances in Translation Cancer Nanomedicine

(2) Smart Nanomedicine based on Hydroxyethyl Starch

**Date:** June 27, 2018 (Wednesday)

**Time:** 10:00 a.m.

**Venue:** L3  
Science Centre



*ALL ARE WELCOME*

Contact Person:  
Prof. To Ngai