

**DEPARTMENT OF CHEMISTRY AND
ENVIRONMENTAL SCIENCE**

FALL 2016 SEMINAR SERIES

Sponsored by: Purdue Pharma L.P.

Bristol-Myers Squibb Company

Tuesday, October 25, 2016

2:30 PM

Tiernan Hall

Room 373

GUEST SPEAKER

Junyong Jo, Ph.D.

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TOPIC

**Impact Chemistry at Merck Research Laboratories: Colorimetric Assay Method and its
Application toward Real-time Monitoring of Palladium level in Reaction Stream**

ABSTRACT

After brief introduction about Merck Research Laboratories, how analytical research can have practical impacts on process development of API (Active Pharmaceutical Ingredient) will be discussed. As an example, non-traditional assay method for residual metal contaminant in API that is recently developed at Merck will be discussed. Determination of residual level of metal ions such as palladium has been paid increasing attention in various consumer-goods industries including pharmaceutical and plastic industry due to its high toxicity and deleterious effects. Recently we developed a catalyst-based assay method where a wide range of palladium level can be assayed by dramatic color changes of a pre-mixed sensory solution. In this approach, allylic group attached resorufin ($\lambda_{\text{max}} = 460\text{nm}$) undergoes deallylation in the presence of palladium ion and restores the characteristic UV absorption band at $\lambda_{\text{max}} = 570\text{nm}$. Under the further optimized conditions, the reaction between palladium and detector molecule can be instantly completed within a minute and display concomitant color changes. Such rapid response to low level of palladium allowed us to design and implement this assay method into a real-time monitoring of palladium level in the reaction stream.

BIOGRAPHY

Before entering doctorate course at Indiana University, Junyong Jo worked at a Korean Branch of Sumitomo Chemical Co., Ltd., where he provided analytical support for the color filter of LCD monitor products and photo-resist materials. In 2007, he arrived at Indiana University Bloomington and joined the research group of Prof. Dongwhan Lee. During the following 5 years, his research focused on the development of fluorometric and/or colorimetric detector molecule for toxic ions including metal ions, cyanide, thiols, and etc. He then joined Analytical R&D department at Merck Research Laboratories in 2013. At Merck, he made key contribution on developing drug candidates such as Hepatitis C virus (HCV), Type II Diabetes, immuno-oncology, and anti-bacterial drugs. In parallel, he is conducting his own research project which serves as a bridge between his Ph.D. research interest and industrial needs.

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