

## CBC SEMINAR ANNOUNCEMENT



**Professor Kyo Han Ahn**  
**Pohang University of Science and Technology**

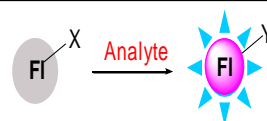
### Toward "Turn-On" Fluorescence Sensing through the Reaction-based Approach

Molecular sensing of analytes of biochemical, clinical and environmental significance with high selectivity and sensitivity has attracted continuing research interest, for their potential applications to biochemical studies, disease diagnosis, and monitoring of hazardous substances. For these purposes, fluorescent probes have attracted great attention for their high sensitivity and operational simplicity. Many fluorescent probes have been developed by combining a fluorescent dye with a recognition unit that interacts with a target analyte by weak molecular interactions such as H-bonding, cation- $\pi$ , and electrostatic interactions. Such a supramolecular approach is valuable and essential; however, sometimes it is challenging to achieve a high level of selectivity toward certain target species and also to realize turn-on type fluorescent response for the analytes that act as quenchers. To address these issues, we have explored turn-on fluorescent probes based on organic reactions. Although the reaction-based approach was introduced a decade ago,<sup>1</sup> its full potential remained unexplored until a recent resurgence in the development of fluorescent probes for heavy metal species. To realize analyte specificity as well as turn-on type fluorescence sensing for anion species, we initiated the reaction based approach to sense anions such as cyanide and carboxylates. As a result, we have developed the first turn-on sensing system for the anions based on the reaction based approach.<sup>2,3</sup> In our continuous efforts in the development of turn-on fluorescence sensing systems based on chemical conversions, we also embarked on the fluorescent sensing of cations through the reaction based approach. In this seminar, I will present our efforts in the rational design of turn-on fluorescent probes by the reaction based approach.<sup>4-9</sup>

#### References

Dujols, V.; Ford, F.; Czarnik, A. W. *J. Am. Chem. Soc.* **1997**, *119*, 7386  
 Chung, Y. M.; Raman, B.; Kim, D.-S.; Ahn, K. H. *Chem. Commun.* **2006**, 186.  
 Ryu, D.; Park, E.; Kim, D.-S.; Yan, S.; Lee, J. Y.; Chang, B.-Y.; Ahn, K. H. *J. Am. Chem. Soc.* **2008**, *130*, 2394. Chatterjee, A.; Santra, M.; Won, N.; Kim, S.; Kim, J. K.; Kim, S. B.; Ahn, K. H. *J. Am. Chem. Soc.* **2009**, *131*, 2040. Santra, M.; Ryu, D.; Chatterjee, A.; Ko, S.-K.; Shin, I.; Ahn, K. H. *Chem. Commun.* **2009**, 2115. Egorova, O. A.; Seo, H.; Chatterjee, A.; Ahn, K. H. *Org. Lett.* **2010**, *12*, 401. Santra, M.; Ko, S.-K.; Shin, I.; Ahn, K. H. *Chem. Commun.* **2010**, *46*, 3964. Jun, M. E.; Ahn, K. H. *Org. Lett.* **2010**, *12*, 2790-2793. For a Feature Article, see: Jun, M. E.; Roy, B.; Ahn, K. H. *Chem. Commun.* **2011**, *47*, 7583-7601.

**Reaction-based fluorescent sensing**  
through specific chemical transformations  
(by target analytes), such as addition,  
displacement, lysis, etc



**Date:** 15<sup>th</sup> February 2012 (Wednesday)  
**Time:** 2:15pm – 3:45pm  
**Venue:** NTU SPMS CBC Building Level 2,  
Conference Room  
**Host:** Professor Cheol-Min Park