



## Dr. Kenji Yokoyama

### TITLE

### Highly Sensitive Newly Designed Fluorescent Protein Probes and Application to 2D Electrophoresis

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Development of novel fluorescent molecular probes with high performance is of much importance to detect proteins at high sensitivity. We designed and synthesized a fluorescent molecule with both hydroxystyryl and cyanopyranil moieties to detect the proteins via non-covalent bonding [1]. The most important and advantageous feature of this probe molecule is no fluorescence emission in the absence of protein. The derivative with sulfonyl group has also been developed [2]. This probe is more soluble in an aqueous solution, and hence they can be applied to in-gel protein staining. In addition, we designed a more sensitive probe that is commercially available as Rapid FluoroStain KANTO (Kanto Chemical).

In this study, we evaluated the performance of Rapid FluoroStain KANTO for in-gel protein staining. A fully automated two-dimensional electrophoresis (2DE) system developed by our group [3] was employed. This automated 2DE system can realize high-throughput proteomic analysis with high reproducibility and compact design. Sensitivity of protein staining was comparable with commercially available fluorescent probes. It takes only 90 minutes to complete protein staining process, and this is much shorter than any other probes. In addition, we successfully designed a novel fluorescent probe that is more sensitive than Rapid FluoroStain KANTO. We will report the details of the new probe at the conference.

[1] Y Suzuki, K Yokoyama, *J. Am. Chem. Soc.*, 127, 17799, 2005.

[2] Y Suzuki, K Yokoyama, *Proteomics*, 8, 2785, 2008.

[3] A Hiratsuka, K Yokoyama, *et al.*, *Anal. Chem.*, 79, 5730, 2007.

### Biography

Dr. Kenji Yokoyama is Deputy Director, Biotechnology Industrialization Center, National Institute of Advanced Industrial Science and Technology (AIST). He received his PhD at Tokyo Institute of Technology in 1991, and after postgraduate research at Research Center for Advanced Science and Technology, University of Tokyo, promoted to Associate Professor at School of Materials Science, Japan Advanced Institute of Science and Technology in 1994. He has moved to AIST since 2002. He has worked on electrochemical biosensors, peptide engineering and development of analytical tool for proteome.