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Born 1978; **Qualifications:** B.Sc. (Chemistry), Mahidol University (2000); M.Sc (Applied Analytical and Inorganic Chemistry), Mahidol University (2003); Ph.D. ((Molecular and Material Science), Okayama University, Japan (2006); **Positions:** Lecturer, Mahidol University (2007 – 2015); Assistant Professor, Mahidol University (2015-present); Director of the M. Sc. Program in Applied Analytical and Inorganic Chemistry (2009 – present).

Newly Designed Flow-based Chemical Analysis Method for Determination of Trace Halogen Compounds

The main objective of my scientific efforts is focused on instrumental development for environmental and clinical applications using automated system, especially the development of flow-based system for halogens detection. As we know, halogens are the group the chemical elements including fluorine (F), chlorine (Cl), bromine (Br), and iodine (I). The halogens cannot be found in nature in their elemental form. They are invariably found as salts of the halide ions (F^-, Cl^-, Br^- and I^-), and oxy-halides (BrO_3^- and IO_3^-). These halogen anions are distributed in verity resource and provided difference effect on human health.

Fluoride (F^-) is an essential micronutrient for living beings. In some area, fluoride ion is added to drinking water in very low concentrations since it renders tooth enamel relatively immune to bacteriological attack. Fluoride was also added in some tooth care products such as toothpaste and mouthwash which are utilized for the prevention of dental caries.

The important of chloride (Cl^-) determination extends into all major scientific and technological areas including pure chemistry, industrial chemistry, agriculture and environmental chemistry. High intake of chloride causes an increase overall blood pressure; therefore, the ingestion of sodium chloride should be concerned for the person who has hypertension symptom.

Bromide ion (Br^-) is one of the trace constituents of seawater, and its average concentration in seawater is approximately 60-70 mg L^{-1}. Bromide can combine with many types of organic pollutants in waters form toxic compounds of bromo-derivatives, which can cause serious harm to human and environment. Disinfection of source waters is in practice performed by chlorination or ozonation procedure. The disinfection of bromide-containing source waters results in the production of bromate (BrO_3^-), which has been classified as human carcinogen.

Iodine (I^- and IO_3^-) is an essential trace element for human life. It is one function is to participate in the synthesis of the hormone thyroxine by the thyroid gland. The average daily requirement of iodine is about 150 μg in order to avoid iodine deficiency disorder (IDD) symptom.

It is essential to have an accurate and precise method available to determine halogen compounds in the environment and consumer products. Therefore, my research is aimed to use new chromogenic reagents for spectrophotometric detection of halogen anions. These ions have been usually determined by sophisticated techniques such as ion chromatography (IC), gas chromatography (GC) and capillary electrophoresis (CE). Most of these techniques are expensive instruments, high operation cost, complicated procedure and long analysis time. The novel spectrophotometric detection systems are easily applied to automation systems by using flow-based technique which capable of having a high sampling rate and a minimum sample and reagent consumption. Various flow-based approach (FIA, MS-FIA) for analysis of halide ions have been reported. The flow technique can be configured in a wide verity of difference modes, depending on the desired applications.

Selected publications on the above exploitations:

[1] K. Danchana, F. Maya, P. Wilairat, K. Uraisin, and V. Cerdà, Spectrophotometric determination of bromide in water using the multisyringe flow injection analysis technique coupled to a gas-diffusion unit, *Anal. Methods*, **7 (2015)**, 4202-4208.

[2] K. Uraisin, T. Takayanagi, D. Nacapricha and S. Motomizu, Novel Oxidation Reaction of Prochlorperazine with Bromate in the Presence of Synergistic Activators and Its Application to Trace Determination by Flow Injection/Spectrophotometric Method, *Anal. Chim. Acta*, **580 (2006)** 68-74.

[3] K. Uraisin, T. Takayanagi, M. Oshima, D. Nacapricha and S. Motomizu, Simple and Highly Sensitive Spectrophotometric Flow Injection Method for the Determination of Iodate in Iodized Salt, *J. Flow Injection Analysis*, **23 (2006)** 13-18.

[4] K. Uraisin, T. Takayanagi, M. Oshima, D. Nacapricha and S. Motomizu, Kinetic-Spectrophotometric Method for the Determination of Trace Amounts of Bromide in Seawater, *Talanta*, **68 (2006)** 951-956.

[5] D. Nacapricha, K. Uraisin, N. Ratanawimarnwong and K. Grudpan, Simple and Selective Method for Determination of Iodide in Pharmaceutical Products by Flow Injection Analysis Using the Iodine-Starch Reaction, *Anal. Bioanal. Chem.*, **378 (2004)** 816-82.