**Announcements**

**2019**

**Oct. 27 - Nov. 1**
(Okinawa, Japan)
The 13th Pacific Rim Conference of Ceramic Societies (PACRIM 13).
Contact: PACRIM13 Secretariat (e-mail: pacrim13@cersj.org; Website: http://www.ceramic.or.jp/pacrim13/).

**Nov. 3 – 8**
(Sapporo, Japan)
8th International Symposium on Practical Surface Analysis (PSA-19).
Contact: Symposium Secretary, Hiroto Itoh, Analysis Group, KONICA MINOLTA, INC., 1 Sakura-machi, Hino, Tokyo 191-8511, Japan (e-mail: secretary-psa19@sasj.jp; Website: http://www.sasj.jp/PSA/PSA19/).

**Nov. 3 – 8**
(Okinawa, Japan)
Okinawa Colloids 2019: An International Conference on Colloid & Surface Science Celebrating the 70th Anniversary of the Divisional Meeting of DCSC, CSJ.
Contact: Executive Committee (e-mail: office@okinawacolloids.jp; Website: http://www.okinawacolloids.jp/).

**Nov. 6 – 8**
(Taipei, Taiwan)
The International Joint Meeting of the Polarographic Society of Japan (PSJ) and National Taiwan University (NTU)—The 65th Annual Meeting of PSJ—.

**2020**

**Dec. 1 - 5**
(Kyoto, Japan)
49th International Symposium on High Performance Liquid Phase Separations and Related Techniques (HPLC2019 Kyoto).
Contact: info@hplc2019kyoto.com; Website: https://hplc2019kyoto.com/.

**2020**

**Jan. 29 - 31**
(Tokyo, Japan)
nano tech 2020 International Nanotechnology Exhibition & Conference.
Contact: Secretariat of nano tech executive committee c/o JTB Communication Design, Inc. Celestine Shiba Mitsui Building, 3-23-1 Shiba, Minato, Tokyo 105-8335, Japan (e-mail: nanotech@jtbcom.co.jp; Website: http://www.nanotechexpo.jp/).

**April 17 – 20**
(Taipei, Taiwan)
Contact: Organizing Committee of ASIANALYSIS 2020 (Website: https://conferences.iams.sinica.edu.tw/ASIANALYSIS2020/home).

*Contact: The Japan Society for Analytical Chemistry, 1-26-2 Nishigotanda, Shinagawa, Tokyo 141-0031, Japan.*
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Nanoparticle Measurement in Liquid by Static and Dynamic Light Scattering

Kayori Takahashi

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Static and dynamic light scattering is a powerful technique for the sizing of nanoparticles and characterization of their properties in the liquid phase. Static light scattering provides the concentration or molar mass of particles from the time-averaged scattered light intensity, whereas dynamic light scattering gives their diffusion constant from the auto-correlation function of the scattering field. Static light scattering also provides the radius of gyration of the particles, and the dynamic light scattering gives their hydrodynamic radius from the Stokes-Einstein relationship of Brownian motion. The radius of gyration and the hydrodynamic radius are different measurands from each other, and they show particular mean sizes from different averaging calculations according to the particle size distributions. However, the precision of these techniques remains unclear, and therefore, in the current work, the precision of the scattering techniques for sizing polystyrene latex suspensions and the uncertainty of the data are estimated. The apparent diffusion coefficients obtained at various angles and concentrations showed properties characteristic of polystyrene latex particles with electrostatic interactions. A simulation was used to calculate a dynamic structure factor representing the long-range interactions between particles. Here, an additional application of static and dynamic light scattering for fine bubbles in water is described. The preparation of nanoscale fine bubbles in water is an innovative technology, but no precise method for simultaneously measuring the size and concentration of such bubbles had previously been developed. We have developed a method for simultaneously determining the size and concentration of fine bubbles in water by a light-scattering technique.

**Keywords:** static light scattering; dynamic light scattering; nanoparticle; fine bubble; uncertainty.
Continuous Separation of Micro-particles by Microchip Electro-magnetophoresis Utilizing Aqueous Two-phase Flow

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We report on a novel control technique for the transport of microparticles in a micro-channel for microchip analysis using electromagnetophoresis combined with a conductive/non-conductive aqueous two phase (ATP) flow. A double Y-shaped microchip (20 mm length, 160 μm width) with two inlets and two outlets was used to form a conductive/non-conductive ATP flow. When a 1.16 mol L⁻¹ KCl aqueous solution and a 20 % dextran (Dex) aqueous solution were used as a conductive fluid and a non-conductive fluid, respectively, a conductive/non-conductive ATP flow could be formed in the micro-channel. In this conductive/non-conductive ATP flow, polystyrene (PS) particles with 3, 6 and 10 μm diameters dispersed in the conductive fluid could be focused on the ATP flow interface when electromagnetophoresis was applied on the particles toward the ATP flow interface. On the other hand, carboxylate PS (cPS) particles with 10 μm diameter were transferred into a Dex solution in the same situation. Moreover, by applying staggered-electromagnetophoresis, PS particles were redistributed in the conductive fluid although cPS particles stayed in the non-conductive fluid. Consequently, PS particles and cPS particles could be eluted at different outlets, respectively.

Keywords: electromagnetophoresis; microchip; conductive/non-conductive aqueous two phase flow.

Development and Analytical Application of Nanosystems for Photoenergy Storage and Localization

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Nanosystems for photoenergy storage and localization were established by using nanomaterials of metals and semiconductors. Photocatalysts with oxidative energy storage abilities were developed by means of storing surplus energy generated on TiO₂ electrochemically during the daytime. They can maintain the detection and removal of toxic compounds, even after dark. In order to realize highly sensitive spectroscopic sensing systems under severe conditions, methods that can improve the thermal and chemical stabilities of plasmonic metal nanoparticles were established. Furthermore, effective arrangements of plasmonic metal nanoparticles and dyes were investigated and realized so as to utilize photo-antenna effects based on localized surface plasmon resonance. These technologies should progress the field of spectroscopic analysis, as well photoenergy conversion systems with high efficiency. This review paper is a comprehensive summary of our achievements.

Keywords: TiO₂, photocatalyst; localized surface plasmon resonance (LSPR); plasmon induced charge separation (PICS).
Crystal Structure of Hexakis(quinoline-2-thiolatosilver(I))

Yoshiki Ozawa, Azusa Masunaga, Masahiro Kubo, Nobuhiro Yasuda, and Koshiro Toriumi

Crystal Structure of 6-Aza-3,9-dithiaundecane Hydrochloride

Mari Toyama and Kenji Chayama