第125回応用化学セミナー

共催：大阪公立大学 機能性有機材料開発研究センター・分子エレクトロニックデバイス研究所

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演題：Organic 2-Dimensional Materials for Multiple Applications

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Ajayaghosh教授は、機能性色素やπ共役分子を基盤とした超分子化学・ソフトマテリアル分野の第一人者で、研究成果は、Science、Adv. Mater.、JACS、Angew. Chem. Int. Ed.をはじめ、著名な論文誌に多数報告されています。現在、京都大学の客員教授として来日されており、本学でも今回、共有結合性有機構造体（COF）についてご講演いただく運びとなりました。多数の学生、教員の方々にご参加いただければ幸いです。

Summary: One of our recent research interests is in the domain of organic 2D materials and metal organic polymers. Organic 2D materials such as covalent organic frameworks (COFs), porous organic polymers and metal organic polymers have wide ranging applications in gas storage, energy storage, catalysis, biology etc. However, poor control on the exfoliation of COFs remains a disadvantage for their application as 2-D materials. Therefore, self-exfoliating 2D materials have received special attention. We have developed strategies for the exfoliation, re-stacking, surface-charge control and application using ionic COFs. An example is the propidium iodide-based ionic COFs, PI-TFP. The surface charge on PI-TFP facilitates its initial self-exfoliation. However, interaction with DNA or CB[7] resulted in re-stacking with concomitant changes in fluorescence and zeta potential. Such control on the exfoliation, re-stacking, and the associated regulation of the surface charge in PI-TFP was exploited for controlling bacterial growth. Recently we have reported a benzotristriazine based covalent organic macrocyclic network which exhibited excellent electrochemical energy storage property. Details of these studies will be presented.

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