Fabrication of Innovative Functional Materials of Organic-Inorganic Polyoxometalate Hybrids.

Description of project

Variety of spin and electron states of polyoxamethalate (POM) clusters have been attracted much attentions to achieve future multi functional materials. UK-Japan bilateral project between Prof. Cronin (Glasgow Univ.) and Prof. Akutagawa (Tohoku Univ.) successfully finished the construction of next research stage for new POM materials involving dielectric, magnetic, and gas adsorption properties. The Japanese side was constructed by three groups of physical measurements of dielectric (Prof. Akutagawa at Tohoku Univ.), magnetic (Prof. Oshio at Tsukuba Univ.), and gas adsorption properties (Prof. Nakamura at Hokkaido Univ.). The first scientific discussions were held at Hokkaido Univ. (2012. December) entailed at "International Symposium on Complex Chemical Systems – Towards artificial life", and the second one was held at Glasgow Univ. (2013 June).

Departments and institutions involved

Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University, Research Institute for Electronic Science, Hokkaido University, Graduate School of Pure and Applied Chemistry, Tsukuba University.

How collaboration started

Prof. Tomoyuki Akutagawa and Prof. Lee Cronin have previously worked together. They learnt from this and refined a proposal in a series of meetings and email exchanges.

How the matching funds were sourced

We secured the involvement of Birmingham City Council Staff and Birmingham Resilience team. The city Council funded the travel costs to Japan of one member of staff.

How participants are benefitting from the scheme

The Glasgow group has established the preparation of new functional POM for designing dielectric, magnetic, and gas adsorption properties. It has unique multi-functions in developing new materials based on organic - inorganic hybrid molecular assemblies. Relating these interesting materials is expertise to that being developed with the Japanese groups is providing unique physical measurements to investigate new functions.

Collaborative developments since the project started and plans for the future

The JSPS funded international collaboration has provided an invaluable basis for future long term collaboration between our groups and a stimulus for other related research groups within our respective countries to join our consortium. Further application to JSPS and elsewhere is planned to continue bidirectional international visits and fund young investigators to undertake the related material preparations and physical measurements in both the UK and Japan.

International Symposium on Complex Chemical Systems – Towards artificial life (2012 December 10-11)