

Second Laureate Fundamental Research

- **Research Work Title:** Theory of Interfacial Electric Phenomena of Soft Particles
- **Researcher:** Prof. Hiroyuki Ohshima
- **Country:** Japan
- **Field:** Colloid and Interface Science
- **Scientific Affiliation:** Tokyo University of Science



Abstract:

Prof. Ohshima has established a theory of interfacial electric phenomena of soft particles, which is often called “Ohshima’s soft particle theory”. Soft particles are hard particles covered with an ion-penetrable surface layer of polyelectrolytes and serve as a model for biological cells. The electric properties of soft particles are quite different from those of hard particles without surface structures. This theory successfully explains various electric phenomena of soft particles, which cannot be explained by the traditional theories for hard particles. Electrophoresis of biological cells, in particular, is now widely analyzed on the basis of this theory to obtain the charge density and electrophoretic softness of soft particles. His two books (Theory of Colloid and Interfacial Electric Phenomena, Elsevier, 2006 and Biophysical Chemistry of Biointerfaces, Wiley, 2010) provide a detailed review of the soft particle theory.

Biography:

Mr. Hiroyuki Ohshima is Professor of Pharmaceutical Sciences at the Tokyo University of Science, Japan. He received his BS, Ms, and PhD degrees in physics from the University of Tokyo, Japan. He is the author or co-author of 10 books and more than 300 book chapters and journal publications relating to colloid and interface sciences as well as biophysical chemistry. He was an Editor of Colloids and Surfaces B: Biointerfaces from 1994 to 2012. He is also a Regional Editor for Asia of the journal Colloid and Polymer Science.

