【Abstract of 2008 Grant – in – Aid for Scientific Research on Innovative Areas (Research in a proposed research area)】

Title of project	ATP-energy conversion based upon the molecular understanding of hydration
Head Investigator Name	Makoto Suzuki
Abstract of Research Project **Term of Project: 2008–2012**	ATP, adenosine triphosphate, is the key compound to bridge the physical/chemical and biological sciences. Its decisive role in energy-conversion processes in living organisms is well recognized, however, the molecular understanding of the "ATP energy", especially in the chemical-mechanical energy conversion, is still at embryonic stage. The aim of the research project is to establish molecular energetics of ATP-related processes; on the basis of recent progress of structural and functional insights, ATP energetics will be more microscopic and systematic through the combination of state-of-art methodologies of solution science, biophysics, and single-molecule physiology. ATP-driven protein plays central roles in biological processes, and its deeper understanding contributes to bio/nano-technologies and medical sciences.