Principal Researcher	Katsumi Kaneko	Number of Reserchers	5
Research Institution・Department・Title	Professor, Chemistry, Chiba University	Location of Institution	Chiba

Title of Project	High density storage of clean energy fuel gases in soft nanospaces
Abstract of Research Project	Realization of energy saving society for preservation of global environment is requisite for establishment of high density storage of clean energy fuel gases such as H_2 and CH_4. The most hopeful method of their high density storage is associated with adsorption in solid nanospaces, because the interaction of these gas molecules with the solid nanospace is enhanced. However, even the solid nanospaces cannot offer the sufficient interaction potential field for these gases at supercritical conditions. Therefore, we need to develop new efficient solid nanospaces which are different from traditional nanoporous materials such as zeolites and activated carbons. In this work, we develop new nanoporous solids such as organic-inorganic hybrid porous solids and organic-modified single wall carbon nanotubilites, which are quite hopeful to attain the requirement for the energy storage. We designed these new porous solids and their high pressure adsorption and characterize these solids with high resolution molecular probe technique, in situ X-ray diffraction, in situ SAXS, and other in situ molecular spectroscopy in addition to statistical molecular simulation.
References	1. Adsorption mechanism of supercritical hydrogen in internal and interstitial nanospaces of single wall carbon nanohorn assembly. K. Murata, K. Kaneko, H. Kanoh, D. Kasuya, K. Takahashi, F. Kokai, M. Yudasaka, S. Iijima, *J. Phys. Chem*.B 106, 11132-11138(2002). 2. Restricted hydration structures of Rb and Br ions confined in slit-shaped carbon nanospaces, T. Ohkubo, T. Konishi, Y. Hattori, H. Kanoh, T. Fujikawa, K. Kaneko, *J. Am. Chem. Soc.* 124, 11860-11861 (2002). 3. Micropore development and structural rearrangement of single-wall carbon nanohorn assemblies by compression, E. Bekyarova, K. Kaneko, M. Yudasaka, K. Murata, D. Kasuya, S. Iijima, *Adv. Mater*. 14, 973-975 (2002)
Term of Project	Fiscal years 2003-2007．（5years）

Budget Allocation (in thousand of yen)	FY2003	FY2004	FY2005	FY2006	FY2007	TOTAL
	19,300	17,900	14,400	16,100	11,900	79,600

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