



# Ryong Ryoo

Director,  
IBS CENTER FOR NANOMATERIALS AND CHEMICAL REACTIONS  
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Ryong Ryoo is the director of the Center for Nanomaterials and Chemical Reactions at Institute for Basic Science, and a Distinguished Professor in the Chemistry Department at Korea Advanced Institute of Science and Technology (KAIST). He received his B.S. degree from Seoul National University in 1977, and M.S. from KAIST in 1979. He obtained a Ph.D. degree in the field of heterogeneous catalysis at Stanford University in 1986, with a thesis titled 'Pt clusters supported on Y zeolite', under the supervision of Prof. Michel Boudart. After a one-year postdoctoral experience on solid-state NMR in the Prof. Alex Pines group at University of California at Berkeley in 1986, he started his faculty career as an assistant professor at KAIST. He carried out research on  $^{129}\text{Xe}$  NMR of zeolites and EXAFS of supported metal nanoparticles until 1993 at KAIST. He then extended his research areas to synthesis of mesoporous materials. He is well known for his pioneering work on ordered mesoporous carbons, CMK. He obtained the award 'Leading Scientist in Research Front' from Thomson Scientific in 2007 for his carbon study. Later, he pioneered research on tailored mesoporous materials in which the mesopore walls have a crystalline microporous zeolite structure. He has developed a synthesis route to such mesoporous materials, using various kinds of surfactants that are functionalized with a zeolite structure-directing agent. He received the Breck Award from the International Zeolite Association in 2010 for his work on MFI zeolite nanosheets. He was the third person to be bestowed with the 'National Scientist' title in Korea. He was listed among the Top 100 Chemists of the decade 2000-2010 by UNESCO & IUPAC, based on Thomson Reuters citation impact data. His work on tailored mesoporous zeolites was selected as one of the top 10 breakthroughs of 2011 by Science magazine. Later, he was placed on the list of Thomson Reuters' predictions for the 2014 Nobel Prize in Chemistry (jointly with Charles Kresge and Galen Stucky for Design of Functional Mesoporous Materials).

His current research interests lie in synthesis of nanostructured materials such as mesoporous materials, zeolitic materials, and metal nanoparticles, and their catalytic applications for future energy sources and green chemical technologies. He is author or coauthor of 246 papers published in international journals. His publications recorded more than 21,000 citations, resulting in an h-index of 71 (as of January, 2015). For his publications and further information, please visit <http://rryoo.kaist.ac.kr/>.

## Education

1973-1977	BS from Seoul National University
1977-1979	MS from Korea Advanced Institute of Science and Technology
1982-1985	PhD from Department of Chemistry at Stanford University Major field: heterogeneous catalysis (Advisor: Prof. Michel Boudart)

## Professional Career

1979-1982	Researcher at Korea Atomic Energy Research Institute
1986	Postdoctoral researcher at University of California, Berkeley Major field: solid state NMR (Supervisor: Prof. Alex Pines)

- since 1986 Department of Chemistry  
Korea Advanced Institute of Science and Technology  
Assistant professor (1986-1990), Associate professor (1990-1996), Professor (1996-present), Distinguished Professor (2008-present)
- since 2012 Director of Center for Nanomaterials and Chemical Reactions  
at Institute for Basic Science

#### Board and Membership

- Editorial Board for ChemCatChem (since 2009)  
Editorial Board for Chemical Communications (2006-2009)  
Member, Presidential Advisory Council on Science and Technology, Korea (2008)  
Royal Society of Chemistry Fellow (since 2006)  
Vice-President for Academic Affairs of the Korean Chemical Society (2006)  
Council member of International Zeolite Association (2001 –2007)  
Council member of International Mesoporous Materials Association (2002-2006)  
Member of the Korea Academy of Science and Technology (since 2001)

#### Awards and Honors

- 2014 Thomson Reuters Citation Laureate [i.e., Thomson Reuters' predictions of 2014 Nobel Prize in Chemistry, jointly with Charles Kresge and Galen Stucky for Design of Functional Mesoporous Materials]  
Leading Scientist Fellowship Award by S-Oil (2014)  
Selected research in the top 10 breakthroughs of 2011 by Science magazine  
Top 100 Chemist of the 2000-2010 Decade by UNESCO&IUPAC based on Thomson Reuters citation impact data (2011)  
Breck Award by International Zeolite Association (2010)  
Ho-Am Prize in Science by Samsung Co. (2010)  
Distinguished Professor at KAIST (2008)  
National Scientist by Ministry of Education, Science and Technology, Korea (2007)  
Leading Scientist in a Research Front by Thomson Scientific and KOSEF (2007)  
Top Scientist Award by Korean government (2005)  
Academic Award by Korean Chemical Society (2002)  
Professor of the Year at KAIST (2001)

#### Selected Publications

1. K. Na, C. Jo, J. Kim, K.Cho, J. Jung, Y. Seo, R. J. Messinger, B. F. Chmelka & R. Ryoo, Directing Zeolite Structures into Hierarchically Nanoporous Architectures, *Science*, 333, 328-332 (2011)
2. M. Choi, K. Na, J. Kim, Y. Sakamoto, O. Terasaki & R. Ryoo, Catalytic Effect of Ultrathin MFI Zeolite Synthesized to a Single Unit Cell Thickness, *Nature*, 461, 246-250 (2009)
3. M. Choi, H. S. Cho, R. Srivastava, C. Venkatesan, D.H. Choi & R. Ryoo, Amphiphilic organosilane-directed synthesis of crystalline zeolite with tunable mesoporosity, *Nature Mater.*, 5, 718-723 (2006)
4. S.H. Joo, S.J. Choi, I. Oh, J. Kwak, Z. Liu, O. Terasaki & R. Ryoo, Ordered nanoporous arrays of carbon supporting high dispersions of platinum nanoparticles, *Nature*, 412, 169-172 (2001)
5. R. Ryoo, S.H. Joo & S. Jun, Synthesis of highly ordered carbon molecular sieves via template-mediated structural transformation, *J. Phys. Chem. B*, 103, 7743-7746 (1999)