

# Current status of development of Dy-free Nd-Fe-B for high-temperature applications

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When the critical elements need to be excluded, we are forced to develop high coercivity materials on the basis of compounds that have only marginal magnetic hardness. To accomplish this task, atomistic characterization of grain boundaries and interfaces becomes indispensable to clarify the most fundamental aspect of coercivity. Elements strategic approach for development of high-performance permanent magnets free from critical elements that have possibility to replace the current Nd-Dy-Fe-B sintered magnets will be discussed and recent developments will be presented.

## CURRICULUM VITAE

**Dr. Satoshi Hirosawa**

### Present position

Director,  
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### Date of Birth

August 4<sup>th</sup>, 1953, Kyoto, Japan

### Education:

Dr. Engineering, Kyoto University, 1981, Japan.  
M. Sc. Engineering, Kyoto University, 1978, Japan  
B. Sc. Engineering, Kyoto University, 1976, Japan

### Professional Experience:

2012-present, Director, Elements Strategy Initiative Center for Magnetic Materials, NIMS  
2008-2012, Chief Engineer, NEOMAX Co., Hitachi Metals, Ltd.  
2007-2008, Senior Research Manager, NEOMAX Co., Hitachi Metals, Ltd.  
2004-2007, Senior Research Manager, NEOMAX Co., Ltd.

1991-2004, Research Manager, Sumitomo Special Metals Co., Ltd.

1984-1991, Researcher, Sumitomo Special Metals Co., Ltd.

1983-1984, Research Associate, Carnegie-Mellon University, PA, United States

1981-1984, Research Associate, University of Pittsburgh

Honors:

- Achievement Award, Magnetism Society of Japan, 2009
- Technology Award (Fujimori Award) The Rare Earth Society of Japan, 2009
- Distinguished Paper Award from Japan Society of Powder and Powder Metallurgy, 2007-
- MSJ Outstanding Research Award from Magnetism Society of Japan, 2004
- Advanced Research Award from Japan Society of Powder and Powder Metallurgy, 2004
- Technological Development Award, Japan Institute of Metals, 1987
- Distinguished Paper Award, The Japan Society of Applied Physics, 1987

Educational and Social Activities:

- Appointed Lecturer on Permanent Magnetism, Graduate School of Engineering, Osaka University, Japan (1998-2012)
- Invited Professor, Graduate School of Technology Management, Ritsumeikan University (2005-2007)
- Planning Committee member, Magnetism Society of Japan(1995-1998)
- Editorial Committee member, Magnetism Society of Japan(1992-1995)

Academic and Industrial Activities

More than 170 papers in credited academic journals and books.

More than 200 patent applications and more than 20 patents.