JONGILL HONG

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Materials Science and Engineering, Yonsei University
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EDUCATION

August, 99 **Stanford University,** Stanford, California
Ph.D. degree in Materials Science and Engineering
Dissertation: The magnetic properties and microstructures of iron-based nitride systems for thin-film recording heads

April, 95 **Stanford University,** Stanford, California
M.S. degree in Materials Science and Engineering

February, 91 **Yonsei University,** Seoul, Korea
B.S. degree in Ceramic Engineering

EXPERIENCE

3/02 -present **Professor**
Materials Science and Engineering, Yonsei University
Currently doing research and development of spintronic materials and devices such as an advanced spin switching devices utilizing spin-orbit torque and spin-transfer torque. Studying and developing spintronic devices, such as MTJ-based junctions, spin transistors, and graphene spintronics, are other main thrusts. Unique 3-D patterning for perpendicular patterned magnetic media for over 3 Tb/in.^{2} is also his focus.

3/99 -2/02 **Senior Research Staff Member**
File Memory Laboratory, Fujitsu Limited
Research and development of an advanced GMR spin-valve head for a magnetic recording density of far beyond 100 Gb/in^2. Succeeded in the development of a novel specular-type spin valve which was used in the demonstration of a magnetic recording density of 106.4 Gb/in^2. Set the current record in a GMR value of 20% in the spin valve with a single Cu spacer in 2001. Clarified the mechanism of interlayer coupling in the spin valve with specularly reflective oxide layers. Succeeded in the development of a novel specular-type spin valve with high current efficiency which was used in the demonstration of a magnetic recording density of 56.1 Gb/in^2, the record, in 2000.

HONORS & AWARDS

2020	The Commendation of Science and ICT Minister for The Excellency of Research in ICT, Korean Government, Korea
2018	The KSIA President's Commendation for The Excellency in MRAM Developments, Korean Semiconductor Industry Association (KSIA), Korea
2016	Distinguished Professor Award for Excellency in Research, Yonsei University, Korea
2015	The Best Lecture Professor Award, Yonsei University, Korea
2014	The Prime Minister's Commendation for The Excellency of Research funded by Korean Government, Korean Government, Korea
2013	The Excellency of Research funded by Korean Government, the Ministry of Science, ICT and Future Planning, Korea
2012	The Best Poster Award, Korean Physical Society, Korea
2012	The Best Article Award, The Korean Synchrotron Radiation User's Association, Korea
2012	The Best Article Award, Yonsei University, Korea
2006	The best lecture professor award, Yonsei University, Korea
2001	A certificate of commendation for demonstration of a magnetic recording density of 106.4 Gb/in^2, Fujitsu Limited, Japan
2000	A certificate of commendation for demonstration of a magnetic recording density of 56.1 Gb/in^2, Fujitsu Limited, Japan
2000	A certificate of commendation for the best patent in the second semester of 2000, Fujitsu Limited, Japan
1998	Student Award, International Magnetics Conference, IEEE Magnetics Society, U.S.A.
1991	Korean government overseas scholarship, Ministry of Education, Korea

DOMESTIC & INTERNATIONAL SOCIETY ACTIVITIES

1995~present	IEEE: Member, Education Committee Member in Magnetics Society (2014~2015)
2002~ present	Korea Council, IEEE Magnetics Society: Treasurer, Secretary, and Chair
2002~ present	Korean Magnetics Society: Member, Member of Editorial Committee, and Business Director
2002~ present	Korean Ceramic Society: Member, and Member of Editorial Committee,
2002~ present	Korean Physical Society: Member
2002~ present	Korean Synchrotron Radiation User's Association: Member
2003~ present	Nano-Technology Research Association: Committee member
2005~ present	Emerging Research Device (ERD) division, International Technology Roadmap for Semiconductors (ITRS), Korea Chapter: Local Advisor and Committee member
2013~ present	Editor, Electronic Materials Letters (impact factor: 3.977 (@ Year 2013), ISSN: 1738-8090 (print version), Springer

SELECTED PUBLICATIONS

Jangyup Son,, Jong-Young Lee, Nalae Han, Jongin Cha, Jonghyun Choi, Junyoung Kwon, SungWoo Nam, Kyung-Hwa Yoo, Gwan-Hyoung Lee*, and Jongill Hong*, "Tunable wettability of graphene through non-destructive hydrogenation and wettability-based patterning for bio-applications," accepted for publication (selected as supplementary cover) Nano Letters (2020)

Sachin Pathak, Chanyoung Youm, and Jongill Hong*, "Impact of Spin-Orbit Torque on Spin-Transfer Torque Switching in Magnetic Tunnel Junctions," Scientific Reports Vol. 10, p. 2799 (2020. 02)

Jungho Ko and Jongill Hong*, "Voltage-assisted magnetic switching in MgO/CoFeB-based magnetic tunnel junctions by way of interface reconstruction," ACS Applied Materials and Interfaces Vol. 9, p. 42296 (2017. 11)

Jangyup Son, Soogil Lee, Sang Jin Kim, Byung Cheol Park, Han-Koo Lee, Sanghoon Kim, Jae Hoon Kim, Byung Hee Hong and Jongill Hong*, "Hydrogenated monolayer graphene with reversible and tunable wide band gap and its field-effect transistor," Nature Communications Vol. 7, p. 13261 (2016. 11)

Sangho Lee, Taejin Bae and Jongill Hong*, "Modified analytical method for evaluation of unpatterned double-barrier magnetic tunnel junctions," Appl. Phys. Lett., Vol. 104, p. 263502 (2014. 06)

Sanghoon Kim, Soogil Lee and Jongill Hong*, "An array of ferromagnetic nanoislands nondestructively patterned via a local phase transformation by low-energy proton irradiation," ACS Nano, Vol. 8, p. 4698 (2014. 04)

Sanghoon Kim, Soogil Lee, Jungho Ko, Minseok Kim, Shinill Kang, and Jongill Hong*, "Nanoscale patterning of complex magnetic nanostructures by reduction with low-energy protons," Nature Nanotechnology, Vol. 7, p. 567 (2012. 09)

Yoonsung Han, Jinhee Han, Hyoungjoon Choi*, Hyunjoon Shin, and Jongill Hong*, "Microscopic and electronic roles of B in CoFeB-based magnetic tunnel junctions," Journal of Materials Chemistry, Vol. 21, p. 14967-14970 (2011. 10)

RECENT INVITED PRESENTATIONS

"Voltage-assisted magnetic switching in MgO/CoFeB-based magnetic tunnel junctions by way of interface reconstruction"
Jongill Hong, American Vacuum Society Pacific Rim Symposium on Surfaces, Coatings and Interfaces (PacSurf 2018), Hawaii, USA, December 2018

"Intrinsic monolayer-graphene semiconductor gapped by hydrogenation and its field effect transistor"
Jongill Hong, The International Graphene Innovation Conference, Xi'an, Chian, September 2018

"An Array of Ferromagnetic Nano-Islands for BPM Over 2.5 Gb/in^2 by Non-Destructive Low-Energy Proton Irradiation"
Jongill Hong, The 25th Magnetic Recording Conference 2014, Berkeley, USA, August 2014

“Strong spin-orbit coupling due to unusual pseudomorphic reduction at the interface of the [Co_3O_4/Pd] superlattice by low-energy proton irradiation”
Sanghoon Kim, Soogil Lee, Hyun Hwi Lee, Seoung-Hun Park, Jae-Hoon Park, Han-Koo Lee and **Jongill Hong**
IEEE international magnetics conference 2014, Dresden, Germany, May 2014

“Constructive ion irradiation for nanopatterns”
Sanghoon Kim, Soogil Lee, Jungho Ko, Jangyup Son and **Jongill Hong**
The 3rd International Symposium on Advanced Magnetic Materials and Applications (ISAMMA), Taichung, Taiwan, July 2013

“Magnetic Superlattice Nanostructures Constructively Patterned Reduction though Low Energy Proton”
Sanghoon Kim, Soogil Lee, Jungho Ko, Jangyup Son, and **Jongill Hong**
12th Joint MMM-Intermag Conference, Chicago, Illinois, USA, January 2013