

BIOGRAPHICAL SKETCHES

CHEOLGI KIM

Professor of Department of Physics and Chemistry, DGIST
Director of Magnetic Initiative Life Care Center
(Engineering Research Center funded by NRF)
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Career research experience and Appointments

Chairman of DGIST faculty Union, (2021 March ~ 2022 December)
Dean of graduate School, DGIST (2017 March~ 2018 October)
Director, Magnetic Initiative Life Care Center (2018 June 1~ present)
(Engineering Research Center (ERC) supported by Korean Government)
Director, Center for Bio-Convergence Spin System (2017 January ~ December 2018)
Co-Director, Key lab for nano-Micro-technologies, Vietnam national University, Hanoi
(2017 ~), Vietnam
Chair, Department of Emerging Materials Science (2015 March ~ 2016 December)
Professor, DGIST Since March 2014, moved from Chungnam National University
Director, Center for NanoBioEngineering & Spintronics (WCU),
(Chungnam National University, 2009 April ~ 2013 August)
Professor, Chungnam National University since 2001 March
Visiting Professor, Bielefeld University, Germany (2005 April ~ June)
Visiting Professor, McMaster University, Canada (2005 January ~ December)
Visiting professor, Tohoku University, Japan (December 2001 ~ February 2002)
Senior Scientific Researcher, KRISS (from October 1989 to February 1996)
Guest Researcher, Post-Doc, NIST, USA (1999)

• Awards

2021: Mercater Fellowship (DFG, Germany)
2021.9: Best research award of DGIST, DGIST
202.12 AUMS award (Asian Union of Magnetism Society)
2019.11: Gang Ilgu award from Korean Magnetism Society
2015: Excellent Academic Award of Korea Magnetic Society
2014: Distinction medal from Montpellier University (France)
2011: Research and Development Award from CNU
2011: Excellent Academic award from Korean Federation of Science and Technology Societies
2010: Excellence technology award from CNU
2007: Achievement award from Korea Magnetic Society
2004: Academic award from Chungnam National University

Summary

Prof. CheolGi Kim is a Professor at DGIST as well as the director of the “Magnetism initiative life care research center” funded by the Ministry of Science. He completed his Ph.D. from KAIST in Korea and postdoctoral studies from NIST in USA. He won several domestic and international awards, including a distinction medal from University Montpellier (France, 2014), and AUMS award (Asian Union of Magnetism Societies, 2020), Mercater Fellowship (DFG, Germany 2021). Prof. CG Kim has supervised number of domestic and international Ph.D. students in University and they have successfully settled in the research and development in the area of Spintronics devices and their applications in worldwide.

He has been done numerous revolutionary and original research works based on “Bio-Convergence Spin System” and “emerging technologies” which are related to novel Spintronics devices, their biomedical and industrial

applications. Professor CG Kim published peer review and quality of work in his research career about more than 280 publications in the referred journals with 32 patents and more than 200 paper presentations in domestic and international conferences. In particular, he has done real pioneering work towards the extension of integration of novel Spintronics devices for multiplexed living cell tweezers in magnetophoretic platform. He has firstly developed a concept for the digital manipulation and trapping using nano-/micro-devices of magnetic multilayers, which enables the circuitry manipulation of living cells as well as autonomous separation and trapping depending on the individual cellular characteristics. He is installing these unique devices to investigate the electromagnetic, mechanophysical and biochemical properties of individual cells, which surpasses multiplexing performance over the optical tweezers.

Another specific development from his contribution is the novel PHMR magnetometer (Planar Hall magnetoresistance (HPMR), commonly called as PHR), which has revealed 100 times higher thermal stability compared with GMR and TMR sensors. He has firstly been introduced the exchange bias to get the coherent magnetization in PHMR element which is improving field sensitivity with linearity. Especially PHMR magnetometer has demonstrated ultra-sensitive detection capability of magnetic moment down to 10^{-14} emu resolution, which surpasses the performance of existing SQUID system, and thereby magnetic biochip with ~fM resolution.

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