

Resume

Wonsub Chung

Contact Information

Wonsub Chung, ph.D.
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Personal

DOB : 1-23-1957, Male, Married, Born in South Korea

Education

Ph.D., Materials Science and Engineering, 1985-1989
Kyushu University, Hukuoka, Japan(Advisor: Prof. Ono Yoichi)
Thesis: A Basic Study on Gas Reduction of Calcium Ferrite

M.S., Materials Science and Engineering, 1983-1985
Pusan National University, Busan, South Korea (Advisor: Prof. Kyusub Song)
Thesis:

B.S., Materials Science and Engineering, 1978-1983
Pusan National University, Busan, South Korea,

Major Career

- 1989-1992 Chief Researcher

RIST(Research Institute of Industrial Science & Technology)

Iron Ore Melting Reduction Research Project Team

- 1993-Present : Professor

Pusan National University

Division of Material Science & Engineering

- 1999–2000 Exchange professor

Colorado School of Mines, Colorado, USA

Research Interests

- ⑩ Energy saving and Radiation **Heat transfer and dissipation**
- ⑩ Study on Water Electrolysis Using Radiation and Electrical Energy
- ⑩ Study on Reduction of Covalent Bonding Energy of Reaction Using Radiation and Electric Energy
- ⑩ A study on the gasification reaction of coal using radiant energy
- ⑩ **Electrochemical anodic oxidation and deposition**
- ⑩ Corrosion and prevention of metallic materials (Mg, Al alloys and steels)
- ⑩ Surface physics and chemistry

Expertise

- ⑩ Electrochemical fabrication (anodic oxidation and electrodeposition) and analysis (corrosion, catalysis, capacitor and ion permeation.)
- ⑩ Thermal conductivity and heat dissipation
- ⑩ Functional surface treatments (lubricant infusion, hydrophobic coatings, plasma electrolytic oxidation and particle immersion reaction assisted coatings)
- ⑩ Micro-/nano- structure fabrication (laser interference and photo lithography)
- ⑩ Characterization of materials (XPS, SEM, XRD, EDS, AFM, DTA, DSC) and surface chemistry

Patents

- [0] Coating composite for heat dissipation and method of manufacturing the same (Rep. Korea, applied patent), Cheol Ung Lee, Ji Yong Lee, Tae Ho Jeong, Kwang Min Yoon, **Won Sub Chung**, Jung Hoon Lee, Dong Hyun Kim
- [1] Method of surface-treating aluminum material for dissipating heat (U.S., German, Japan, applied patent), Ji Yong Lee, Cheol Ung Lee, Kwang Min Yoon, Tae Ho Jeong, Dong Hyun Kim, Jung Hoon Lee, **Won Sub Chung**
- [2] Surface treatment method of aluminum material for radiating heat (Rep. Korea, applied patent), Ji Yong Lee, Cheol Ung Lee, Kwang Min Yoon, Tae Ho Jeong, Dong Hyun Kim, Jung Hoon Lee, **Won Sub Chung**
- [3] High heat dissipation ceramic composite, manufacturing method therefor, and uses thereof (PCT and Rep. Korea, applied patent), **Won Sub Chung**, Jung Hoon Lee, Kyoung Wook Lee
- [4] Preprocessing method of magnesium alloy for electroplating (Rep. Korea, applied patent), Hyung Sop Yoon, **Won Sub Chung**, Jung Hoon Lee

- [5] Plating method pretreatment method for magnesium alloy (Rep. Korea, applied patent), Dong Ha Kang, Tae Sung Lim, Hyung Sop Yoon, Kang Sun Lee, **Won Sub Chung**, Jung Hoon Lee
- [6] Method of plating copper on magnesium alloy and copper plating magnesium alloy (Rep. Korea, registered patent), **Won Sub Chung**, Yong Hwan Kim, Jung Hoon Lee
- [7] Method of plating nickel on magnesium alloy and Nickel plating magnesium alloy (Rep. Korea, registered patent), **Won Sub Chung**, Yong Hwan Kim, Jung Hoon Lee

Peer-Reviewed Publications

- [1] Junghoon Lee, Donghyun Kim, Chang-Hwan Choi, Wonsub Chung, “**Nanoporous Anodic Alumina Oxide Layer and Its Sealing for the Enhancement of Radiative Heat Dissipation of Aluminum Alloy**”, *Nano Energy*, 31 (2017) 504. doi: [10.1016/j.nanoen.2016.12.007](https://doi.org/10.1016/j.nanoen.2016.12.007)
- [2] Donghyun Kim, **Junghoon Lee (co-first author)**, Chang-Hwan Choi, Wonsub Chung, “**Enhancement of Heat Dissipation of LED Module with Cupric-Oxide Composite Coating on Aluminum-Alloy Heat Sink**”, *Energy Conversion and Management*, 106 (2015) 958. doi: [10.1016/j.enconman.2015.10.049](https://doi.org/10.1016/j.enconman.2015.10.049)
- [3] Donghyun Kim, Dahye Sung, **Junghoon Lee**, Yonghwan Kim, Wonsub Chung, “**Composite plasma electrolytic oxidation to improve the thermal radiation performance and corrosion resistance on an Al substrate**”, *Applied Surface Science*, 357 Part B (2015) 1396. doi: [10.1016/j.apsusc.2015.10.003](https://doi.org/10.1016/j.apsusc.2015.10.003)
- [4] **Junghoon Lee**, Junho Kim, Donghyun Kim, Wonsub Chung, “**Heat Dissipation Performance of Metal-Core Printed Circuit Board by Anodic Oxidation and Electroless Deposition**”, *Thermochimica Acta*, 589 (2014) 278. doi: [10.1016/j.tca.2014.06.001](https://doi.org/10.1016/j.tca.2014.06.001)
- [5] [Wang Ryeol Kim](#), [Min Chul Kwon](#), **Jung Hoon Lee**, [Uoo Chang Jung](#), [Won Sub Chung](#), “**Mechanical and Structural Properties of Superhard TiAlSiN Coatings Deposited by Arc Ion Plating of Cylindrical Cathode**”, *Materials Science Forum* 05/2014; 783-786. doi: www.scientific.net/MSF.783-786.1426
- [6] **Junghoon Lee**, Yonghwan Kim, Junho Kim, Wonsub Chung, “**Effect of Sealing on Thermal Conductivity of Aluminum Anodic Oxide Layer**”, *Journal of Nanoelectronics and Optoelectronics*, 9 (2014) 136. doi: [10.1166/jno.2014.1563](https://doi.org/10.1166/jno.2014.1563)
- [7] Ji-Hong Kim, **Jung-Hoon Lee**, Young-Joo Lee, Yoon-Suk Oh, Won-sub Chung, “**Behavior of Impurities during Purification of Neodymium by Zone Refining**”, *Journal of the Korean Institute of Metals and Materials*, 52 (2014) 535. doi: [10.3365/KJMM.2014.52.7.535](https://doi.org/10.3365/KJMM.2014.52.7.535)
- [8] **Junghoon Lee**, Yonghwan Kim, Heuiun Jang, Wonsub Chung, “**Cr₂O₃ sealing of anodized aluminum alloy by heat treatment**”, *Surface and Coatings Technology*, 243 (2014) 34. doi: [10.1016/j.surfcoat.2012.05.071](https://doi.org/10.1016/j.surfcoat.2012.05.071)
- [9] **Junghoon Lee**, Uoochang Jung, Wangryeol Kim, Wonsub Chung, “**Effects of residual water in pores of aluminum anodic oxide layer during sealing on corrosion resistance**”, *Applied Surface Science*, 283 (2013) 941. doi: [10.1016/j.apsusc.2013.07.047](https://doi.org/10.1016/j.apsusc.2013.07.047)
- [10] **Junghoon Lee**, Yonghwan Kim, Uoochang Jung, Wonsub Chung, “**Thermal Conductivity of Anodized Aluminium Oxide Layer: The Effect of Electrolyte and Temperature**”, *Materials Chemistry and Physics*, 141 (2013) 680. doi: [10.1016/j.matchemphys.2013.05.058](https://doi.org/10.1016/j.matchemphys.2013.05.058)

- [11] **Junghoon Lee**, Yonghwan Kim, Wonsub Chung, “**Effect of Ar bubbling during plasma electrolytic oxidation of AZ31B magnesium alloy in silicate electrolyte**”, *Applied Surface Science*, 259 (2012) 454. doi: [10.1016/j.apsusc.2012.07.065](https://doi.org/10.1016/j.apsusc.2012.07.065)
- [12] **Junghoon Lee**, Wonsub Chung, Uoochang Jung, Yonghwan Kim, “**Direct nickel electrodeposition on magnesium alloy in pyrophosphate electrolyte**”, *Surface and Coatings Technology*, 205 (2011) 4018. doi: [10.1016/j.surfcoat.2011.02.029](https://doi.org/10.1016/j.surfcoat.2011.02.029)
- [13] **Jung Hoon Lee**, Yong Hwan Kim, Uoo Chang Jung, Won Sub Chung, “**Electroplating on Magnesium Alloy in KF-Added Pyrophosphate Copper Bath**”, *Journal of the Korean Institute of Metals and Materials*, 48 (2010) 218. doi: [10.3365/KJMM.2010.48.03.218](https://doi.org/10.3365/KJMM.2010.48.03.218)
- [14] Jung Min Han, **Jung Hoon Lee**, Yong Hwan Kim, Uoo Chang Jung, Won Sub Chung, “**Effects of Pulse-Reverse Current on Purity of Deposit in Electrowinning of Cobalt**”, *Journal of the Korean Institute of Metals and Materials*, 48 (2010) 1014. doi: [10.3365/KJMM.2010.48.11.1014](https://doi.org/10.3365/KJMM.2010.48.11.1014)
- [15] Kyung-Sik Son, **Jung-Hoon Lee**, Yong-je Choi, Uoo-Chang Jung, Won-Sub Chung, “**Effect of Intermediate Layer Coated Diamond Particles on Performance of Diamond Tool**”, *Journal of the Korean institute of surface engineering*, 46 (2013) 216. doi: [10.5695/JKISE.2013.46.5.216](https://doi.org/10.5695/JKISE.2013.46.5.216)
- [16] Mihui Seo, Donghyun Kim, **Junghoon Lee**, Wonsub Chung, “**The Study on Coatings to Improve Radiative Heat Dissipation of Aluminum Alloy**”, *Journal of the Korean institute of surface engineering*, 46 (2013) 208. doi: [10.5695/JKISE.2013.46.5.208](https://doi.org/10.5695/JKISE.2013.46.5.208)
- [17] Heui-un Jang, **Jung-hoon Lee**, Yong-hwan Kim, Won-sub Chung, “**Study on Passive Layer Characteristics of Chemically Passivated Duplex Stainless Steel**”, *Journal of the Korean institute of surface engineering*, 45 (2012) 219. doi: [10.5695/JKISE.2012.45.6.219](https://doi.org/10.5695/JKISE.2012.45.6.219)
- [18] Jae-Min Kim, **Jung-hoon Lee**, Yong-Hwan Kim, Young-Ha Kim, Moon-Hi Hong, Jeong-Hwon Woo, Won-Sub Chung, “**Effects of Chloride Concentration on Zinc Electroplating**”, *Journal of the Korean institute of surface engineering*, 43 (2010) 51.

Research Projects Involved

- ⑩ Research on an improvement of heat dissipation ability of aluminum alloys by surface treatment, *Hyundai Motor Company*(2012. 09~2014. 03)
- ⑩ Development and commercialization of advanced hybrid fabrication technology, *Korea Institute of Industrial Technology*(2012. 05~2014. 10)
- ⑩ Research on anticorrosion characteristics for development of low cost duplex stainless steel, *POSCO Specialty Steel Co., Ltd.* (2012. 05~2013. 04)
- ⑩ High purity Nd metal reduction and refining technology for advanced permanent magnet, *Korea Ministry of Knowledge Economy Foundation*(2011. 12~2014. 10)
- ⑩ Development of 4N grade high purity boehmite manufacturing electrolysis process technology, *LMAC Co., Ltd.*(2011. 10~2012.09)
- ⑩ Development of diamond dispersed nickel coating process, *Hyosung Corporation*(2011. 09~2014. 10)
- ⑩ Study of radiation energy transformation and its application, *Pusan National University*(2011. 07~2012.06)

- ⑩ Development of optimized Inconel 718 processing for automobile torsion spring, *Kowel Special Steel Wire Co., Ltd.*(2011. 07~2012. 01)
- ⑩ Direct electro-deposition of nickel and copper on magnesium alloys for automobile, *Hyundai Motor Company*(2010. 09~2011. 03)
- ⑩ Development of advanced sacrificial anode material for cathodic protection of ships, *STX Offshore & Shipbuilding Co., Ltd.*(2010. 08~2010. 12)
- ⑩ Study on a reliability of ECO-Lining-Stainless steel tube, *Hyundai Hysco Co., Ltd.*(2010. 04~2011. 03)
- ⑩ Research on processing of hybrid materials, *National Research Foundation of Korea*(2010. 03~2013. 02)
- ⑩ Development of wet surface treatment for stainless steel to improve seawater resistivity and apply surface color, *KOS Wire Trading Co., Ltd.*(2009. 09~2010. 03)
- ⑩ Research on cobalt electrowinning for a manufacture of high purity cobalt, *LS-Nikko Copper Inc.*(2009. 03~2011. 02)
- ⑩ Quantification of absorbed hydrogen during zinc electroplating of high strength steel, *POSCO Co., Ltd.*(2008. 12~2009. 09)
- ⑩ Development of diamond coating process of steel wire, *Kiswire Co., Ltd.*(2008. 11~2011. 01)
- ⑩ Study on development of hybrid surface materials, *National Research Foundation of Korea*(2008. 03~2010. 02)
- ⑩ Effect of zinc thickness by electroplating on surface morphology, *POSCO Co., Ltd.*(2008. 01~2008. 12)