

Program Overview

| | Island Ballroom 1&2 | Island Ballroom 3 | Wind Hall |
|-------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------|
| NOVEMBER 6, 2019 (WEDNESDAY) | | | |
| 12:00- | Registration | | |
| 14:00-14:40 | Plenary Lecture - Prof. Hideshi Miura | | |
| 14:40-15:20 | International Workshop on 3D Printing Materials and Process I | - | - |
| 15:20-15:30 | Coffee Break | | |
| 15:30-18:30 | International Workshop on 3D Printing Materials and Process II | High Entropy Alloys / Materials | Green and Smart Convergence Materials in SEOULTECH |
| NOVEMBER 7, 2019 (THURSDAY) | | | |
| 08:30- | Registration | | |
| 09:00- | - | - | Presentation Competition for Shinhan Diamond Award I (09:00-) |
| 09:30-10:30 | International Workshop on 3D Printing Materials and Process III | Nano Materials Processing for Energy Driving & Converting System I | |
| 10:30-10:40 | Coffee Break | | |
| 10:40-12:00 | Advanced Functional Materials | Nano Materials Processing for Energy Driving & Converting System II | Presentation Competition for Shinhan Diamond Award II |
| 12:00-13:00 | Lunch Break | | |
| 12:00-16:30 | Poster Presentation (Hallway) | | |
| 13:00-13:40 | Plenary Lecture - Dr. Thomas Weissgaerber | | |
| 13:40-14:10 | Plenary Lecture – Prof. Seong-Jin Park | | |
| 14:10-15:50 | Materials Research in Defense Science and Technology I (Korean Citizen Only) | Powder Materials Processing I | Rare Earth and Energy Materials |
| 15:40-16:10 | - Review the posters at 15:40-16:10 for Best Poster Awards - | | |
| 15:50-17:10 | Materials Research in Defense Science and Technology II (Korean Citizen Only) | Powder Materials Processing II | Industry Announcement (-17:20) |
| 17:30-18:00 | KPMI Meeting (Wind Hall) | | |
| 18:00-20:00 | Conference Dinner | | |
| NOVEMBER 8, 2019 (FRIDAY) | | | |
| | Island Ballroom 1 | | Island Ballroom 3 |
| 09:30-10:30 | Powder Materials Processing III | | Magnetic Materials |
| 10:30-10:40 | Coffee Break | | |
| 10:30-12:00 | Powder Materials Processing IV | | Powder Injection Modeling |
| 12:00-17:00 | Panel Discussion: "Development Strategy for Basic Materials Science and Technology" | | |

Scientific Program

► Wednesday, November 6, 14:00-14:40

| Island Ballroom 1&2 |
|--------------------------------------------------------------------------------------|
| Plenary Lecture |
| Chair : Yong Ho Choa (Hanyang Univ) Prof. Hideshi Miura, Kyushu University, Japan |

► Wednesday, November 6, 14:40-15:20

| Island Ballroom 1&2 | Island Ballroom 3 | Wind Hall |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------|
| International Workshop on 3D Printing Materials and Process I Chair : Ji Hun Yu (KIMS) Min-Cheol Kang (3DP Res Org) Keynote Lecture SA-K1 Yong Liu SA-K2 Tadachika Nakayama | - | - |

► Wednesday, November 6, 15:30-18:30

| Island Ballroom 1&2 | Island Ballroom 3 | Wind Hall |
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| International Workshop on 3D Printing Materials and Process II Chair: Ji Hun Yu (KIMS) Min-Cheol Kang (3DP ResOrg) Keynote Lecture SA-K3 Sundar V. Atre SA-K4 Seung Ki Moon SA-K5 Kazunari Shinagawa Invited Lecture SA-I1 Youngseok Song SA-I2 Youngcheol Jo SA-I3 Jong Bae Jeon SA-I4 Hyun-Gil Kim SA-I5 Kyeongwoon Chung SA-I6 Yoon Suk Choi | High Entropy Alloys / Materials Chair: Ho-Jin Ryu (KAIST) Kee-Ahn Lee (InhaUniv) Keynote Lecture SB-K1 Hidemi Kato Oral Presentation SB01 SeonGi Lee SB02 Taegyul Lee SB03 Ashutosh Sharma SB04 SeungHyeok Chung SB05 PeymanAsghari-Rad SB06 Praveen Sathiyamoorthi | Green and Smart Convergence Materials in SEOULTECH Chair : Young-Keun Jeong (Pusan National Univ) Chang-Yong Hyun (SEOULTECH) Invited Lecture SC-I1 Hogyoung Kim Oral Presentation SC01 Min Hyeok Park SC02 Jong-hyeon Won SC03 Chae Rim Lee SC04 Woo Lim Choi SC05 Kyeong Hwan Jo SC06 Myeonghun Jo SC07 SeungBeom Cho |

Scientific Program

► Thursday, November 7, 09:30-10:30

| Island Ballroom 1&2 | Island Ballroom 3 | Wind Hall |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>International Workshop on 3D Printing Materials and Process III</p> <p>Chair: Suk Hoon Kang(KAERI) Kyung Tae Kim (KIMS)</p> <p>Invited Lecture SA-I7 Elena López</p> <p>Oral Presentation SA01 Im Doo Jung SA02 Hyokyung Sung</p> | <p>Nano Materials Processing for Energy Driving &Converting System I</p> <p>Chair: Hwi Jun Kim (KITECH) Jung-Goo Lee (KIMS)</p> <p>Invited Lecture SB-I1 Yong-Jin Kim SB-I2 Jongryoul Kim</p> <p>Oral Presentation SB07 Hee-Ryoung Cha</p> | <p>Presentation Competition for Shinhan Diamond Award I (09:00-)</p> <p>Chair: Sangsun Yang (KIMS) Hyun Seon Hong (SungshinUniv)</p> <p>SC08 Da Seul Shin SC09 Gi-Su Ham SC10 Seong-June Youn SC11 Ki Beom Park SC12 Dong SeonGwak SC13 Minsik Lee</p> |

► Thursday, November 7, 10:40-12:00

| Island Ballroom 1&2 | Island Ballroom 3 | Wind Hall |
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| <p>Advanced Functional Materials</p> <p>Chair: Sung-Soo Ryu(KICET) Haneul Jang(KITECH)</p> <p>SA03 Jai-Sung Lee SA04 MuhmoodUI Hassan SA05 Nam Hun Kwon SA06 Jae Bok Seol</p> | <p>Nano Materials Processing for Energy Driving &Converting System II</p> <p>Chair: Min-Ha Lee (KITECH) Jae Won Jeong (KIMS)</p> <p>SB08 Kyoung-Hoon Bae SB09 Youn-Kyoung Baek SB10 Ga-Yeong Kim</p> | <p>Presentation Competition forShinhan Diamond Award II</p> <p>Chair: Si-Young Chang (KAU) Hanshin Choi (KITECH)</p> <p>SC14 Eun-ah Kim SC15 Seokrok Lee SC16 GiSeung Lee SC17 Junhyub Jeon SC18 Namhyuk Seo</p> |

► Thursday, November 7, 12:00-16:30

| Hallway |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Poster Presentation</p> <p>Review the posters at 15:40-16:10 for Best Poster Awards</p> <p>Chair : Hwi-Jun Kim(KITECH)</p> <p>SP01-SP137 & KP01-KP56</p> |

Scientific Program

► Thursday, November 7, 13:00-14:10

| Island Ballroom 1&2 |
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| Plenary Lecture |
| Chair : Jai-Sung Lee (Hanyang Univ) & Chang Kyu Rhee (KAERI) Dr. Thomas Weissgaerber, Fraunhofer IFAM, Germany Prof. Seong-Jin Park, POSCO |

► Thursday, November 7, 14:10-15:50

| Island Ballroom 1&2 | Island Ballroom 3 | Wind Hall |
|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------|
| Materials Research in Defense Science and Technology I (Korean Citizen Only) | Powder Materials Processing I | Rare Earth and Energy Materials |
| Chair : Sung Ho Lee(ADD) Ki Su Lee (ADD) | Chair : Kyoung Hoon Bae (KIMS) Jin-Kyu Lee (Kongju Natl. Univ) | Chair : Bum Sung Kim (KITECH) Min-Ha Lee(KITECH) |
| Keynote Lecture SA-K6 Seong-Taek Lim | SB11 Haneul Jang | SC19 Hyeondeok Jeong |
| Oral Presentation SA07 Joon Mo Ahn SA08 Soo-Bin Bae SA09 Jung-Hun Lee SA10 Seung Jun Lee | SB12 Suk Hoon Kang | SC20 Jae-Gyeong Yoo |
| | SB13 WahyuajiNarottama Putra | SC21 Sun Woo Nam |
| | SB14 Reza MifahulUlum | SC22 Ahmad Zakiyuddin |
| | SB15 SardarFarhat Abbas | SC23 Sangmin Park |
| | | SC24 Juyoung Cho |

► Thursday, November 7, 15:50-17:10

| Island Ballroom 1&2 | Island Ballroom 3 | Wind Hall |
|--------------------------------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------------------------------|
| Materials Research in Defense Science and Technology II (Korean Citizen Only) | Powder Materials Processing II | Industry Announcement (-17:20) |
| Chair : Youngmoo Kim (ADD) | Chair : Sangsun Yang (KIMS) Min Woo Lee(KITECH) | Chair:Yong-Ho Choa (HanyangUniv) Byung Yoon Lee (Changsung Co.) Chang Kyu Rhee(KAERI) |
| SA11 Hongkyu Kim | SB16 WahyuajiNarottama Putra | SC25 Min Seok Kang |
| SA12 Jongkee Ahn | SB17 Reza MifahulUlum | SC26 Jin-Hyeon Kim |
| SA13 Young-Sam Kwon | SB18 Kang-Min Kim | SC27 Byungjoon Park |
| SA14 Seong Lee | SB19 Tae-Hyun Park | SC28 Jong-Ha Lee |
| | | SC29 Daejung Kim |
| | | SC30 Seung Chun Chang |
| | | SC31 Suk-Joong L. Kang |

Scientific Program

► Friday, November 8, 09:30-10:30

| Island Ballroom 1 | | Island Ballroom 3 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Powder Materials Processing III</p> <p>Chair: Suk Hoon Kang (KAERI) Sung-Soo Ryu(KICET)</p> <p>SA15 Seon-Min Hwang SA16 Da Hye Song SA17 Hyun-Su Kang</p> | - | <p>Magnetic Materials</p> <p>Chair : Min Woo Lee (KITECH) Youngkyun Kim (IAE)</p> <p>SC32 Joonchul Yun SC33 Kyoung-Hoon Bae SC34 CheenepalliNagarjuna</p> |

► Friday, November 8, 10:40-11:40

| Island Ballroom 1 | | Island Ballroom 3 |
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| <p>Powder Materials Processing IV</p> <p>Chair: Min Woo Lee(KITECH) Haneul Jang (KITECH)</p> <p>SA18 Jeong Min Park SA19 So-Yeon Park SA20 Hanshin Choi</p> | - | <p>Powder Injection Molding</p> <p>Chair: Youngkyun Kim(IAE) Se Eun Shin (Sunchon Natl Univ)</p> <p>SC35 Hyeokjun Kwon SC36 Chang Woo Gal</p> |

Oral Session

Wednesday, November 6

Island Ballroom 1&2

▶ Plenary Lecture

Chair: Yong Ho Choa (Hanyang University)

- 14:00 **PL01** **Different properties of Ti Alloy Compacts through AM and MIM Processes**
Hideshi Miura, Kentaro Kudo, Kazunari Shinagawa
Kyushu University

▶ International Workshop on 3D Printing Materials and Process I

Chair: Ji Hun Yu (Korea Institute of Materials Science)
Min-Choel Kang (3D Printing Research Organization)

- 14:40 **SA-K1** **Additive manufacturing of high entropy alloys**
Yong Liu
Central South University
- 15:00 **SA-K2** **Nano Sized 3D Printing and Motion Control by Nano Second Pulsed Field**
Tadachika Nakayama
Nagaoka University of Technology

▶ International Workshop on 3D Printing Materials and Process II

Chair: Ji Hun Yu (Korea Institute of Materials Science)
Min-Choel Kang (3D Printing Research Organization)

- 15:30 **SA-K3** **Processing with Powders: From Powder Metallurgy to Additive Manufacturing**
Sundar V. Atre
University of Louisville
- 15:50 **SA-K4** **Additive Manufacturing Technologies for Electronics: Status and Applications**
Seung Ki Moon
Nanyang technological University
- 16:10 **SA-K5** **Mesoscopic Simulation of Sintering Process by PFM/DEM Combined Method**
Kazunari Shinagawa
Kyushu University

Oral Session

Wednesday, November 6

Island Ballroom 1&2

- 16:30 SA-I1 The Prospect of Metal Powder Materials for Additive Manufacturing in Power Generation**
Youngseok Song
Doosan Heavy Industries Co
- 16:50 SA-I2 Application of Additive Manufacturing & Material Technology in the Automotive Industry**
Youngcheol Jo
Hyundai Motor Company
- 17:10 SA-I3 Unique microstructure and phase transformation behavior of high carbon tool steels deposited by direct energy deposition method**
Jong Bae Jeon¹, Wook-jin Lee¹, Sunmi Shin¹, Tae-Hoon Nam¹, Geon-Woo Park¹,
Jae Hoon Jang², Do-Sik Shim³, Kee-Yong Lee¹
¹Korea Institute of Industrial Technology, ²Korea Institute of Materials Science,
³Korea Maritime and Ocean University
- 17:30 SA-I4 Development of Hybrid Material Manufacturing Technology using Additive Manufacturing**
Hyun-Gil Kim, Il-Hyun Kim
Korea Atomic Energy Research Institute
- 17:50 SA-I5 Stimuli-responsive Smart Materials and its 4D Printing Applications**
Kyeongwoon Chung
Korea Institute of Materials Science
- 18:10 SA-I6 Melt Pools in Laser Powder Bed Fusion: Experiments and Simulations**
Yoon Suk Choi¹, Jaewoong Kim¹, Seulbi Lee¹, Jae-Keun Hong²
¹Pusan National University, ²Korea Institute of Materials Science

Island Ballroom 3

► High Entropy Alloys / Materials

Chair: Ho-Jin Ryu (Korea Advanced Institute of Science and Technology)
Kee-Ahn Lee (Inha University)

- 15:30 SB-K1 Liquid Metal Dealloying and its P/M application**
Hidemi Kato
Tohoku University
- 15:50 SB01 Microstructure and Mechanical Properties of Equiatomic and Non-equiatomic TiMoTaVNB Refractory High-entropy Alloy Prepared by Vacuum Arc Re-melting**
Seongi Lee, Jonghyeok Park, Jaemin Park, Kwangmin Lee
Chonnam National University
- 16:10 SB02 Finding Phase Predicting Factors of High Entropy Alloys by Machine Learning**
Taegyu Lee, Ho Jin Ryu
Korea Advanced Institute of Science and Technology
- 16:30 SB03 Densification and Microstructural Evolution of FeNiCoMnCu High Entropy Alloy Reinforced with WO₃ Nanoparticles Fabricated by Advanced Powder Metallurgy**
Ashutosh Sharma, Myoung Jin Chae, Min Chul Oh, Byungmin Ahn
Ajou University
- 16:50 SB04 The Effects of the Powder Preparation Method on the Microstructure of ODS CoCrFeMnNi High Entropy Alloy**
SeungHyeok Chung, Ho Jin Ryu
Korea Advanced Institute of Science and Technology
- 17:10 SB05 Effect of initial grain size on deformation mechanism during high-pressure torsion in V₁₀Cr₁₅Mn₅Fe₃₅Co₁₀Ni₂₅ high-entropy alloy**
Peyman Asghari-Rad^{1,2}, Praveen Sathiyamoorthi^{1,2}, Jae Wung Bae^{1,2},
Hamed Shahmir³, Alireza Zargaran⁴, Hyoung Seop Kim^{1,2,4}
^{1,2,4}Pohang University of Science and Technology, ³University of Sheffield
- 17:30 SB06 Superior cryogenic tensile properties in medium entropy alloy through grain refinement and heterogeneous microstructure**
Praveen Sathiyamoorthi^{1,2}, Peyman Asghari-Rad^{1,2}, Jeong Min Park^{1,2},
Jongun Moon^{1,2}, Jae Wung Bae^{1,2}, Alireza Zargaran³, Hyoung Seop Kim^{1,2,3}
^{1,2,3}Pohang University of Science and Technology

Oral Session

Wednesday, November 6

Wind Hall

► Green and Smart Convergence Materials in SEOULTECH

Chair: Young-Keun Jeong (Pusan National University)
Chang-Yong Hyun (SEOULTECH)

- 15:30 SC-11 Thin Film characterization in semiconductor devices**
Hogyong Kim
Seoul National University of Science and Technology
- 15:50 SC01 Corrosion inhibition performance and mechanism of water-soluble plant extract for steel material**
Jai-Won Byeon¹, Min-Hyeok Park¹, Jae-Yeon Kim², Jin-Hyeok Song¹, Min-Soo Kim¹
^{1,2}Seoul National University of Science and Technology
- 16:10 SC02 Comparative study on the growth characteristics and film properties of PEALD SnO₂ thin films using different plasma gases**
Jong Hyeon Won¹, Seong Ho Han², Bo Keun Park², Taek-Mo Chung², Jeong Hwan Han^{1,3}
^{1,3}Seoul National University of Science and Technology,
²Korea Research Institute of Chemical Technology (KRICT)
- 16:30 SC03 Photonic memristors based on Ga₂O₃ thin films grown by atomic layer deposition**
Chae Rim Lee¹, Jeong Hwan Han^{1,2}, Tae-Kun Lee¹, Byung Joon Choi^{1,2}
^{1,2}Seoul National University of Science and Technology
- 16:50 SC04 Effect of Carboxylic Acid on Sinter-Bonding of Cu-flake Paste Containing CuO Particles**
Woo Lim Choi, Jong-Hyun Lee
Seoul National University of Science and Technology
- 17:10 SC05 Preparation of a paste using Cu formate/Cu particles in situ mixed during a reduction reaction of Cu₂O and characteristics of sinter-bonding in air**
Kyeong Hwan Jo, Jong-Hyun Lee
Seoul National University of Science and Technology
- 17:30 SC06 Doping Effect of Metal Ion on Transparent Conducting Oxides for Improving Electrochromic Performance**
Myeong-Hun Jo¹, Bon-Ryul Koo², Hyo-Jin Ahn^{1,2}
^{1,2}Seoul National University of Science and Technology
- 17:50 SC07 Blue-emitting perovskite quantum dots based on surface chemical modification**
Seung-Bum Cho, Seung-Gyun Moon, Il-Kyu Park
Seoul National University of Science and Technology

Island Ballroom 1&2

▶ International Workshop on 3D Printing Materials and Process III

Chair: Suk Hoon Kang (Korea Atomic Energy Research Institute)
Kyung Tae Kim (Korea Institute of Materials Science)

- 09:30 SA-I7 **Advanced laser hybrid manufacturing - processes and applications**
E. López¹, J. Moritz¹, S. Polenz¹, J. Schneider¹, F. Brückner^{1,2}, C. Leyens^{1,3}
¹Fraunhofer Institute for Material and Beam Technology IWS,
²Luleå University of Technology, ³TU Dresden
- 09:50 SA01 **Self-Cognitive Metal Component Development via Additive Manufacturing**
Im Doo Jung¹, Hyo Kyung Sung², Sangsun Yang¹, Kyung Tae Kim¹, Jungho Choi¹,
Seong Jin Park³, Ji-Hun Yu¹
¹Korea Institute of Materials Science, ²Gyeongsang National University,
³Pohang University of Science and Technology
- 10:10 SA02 **Effects of scan speeds on tensile behaviors of selective laser melted Inconel 718 at ambient and elevated temperature**
Hyokyung Sung¹, Jungsub Lee¹, Sumin Kim¹, Sangshik Kim¹, Jehyun Lee²
¹Gyeongsang National University, ²Changwon National University

▶ Advanced Functional Materials

Chair: Sung-Soo Ryu (Korea Institute of Ceramic Engineering and Technology)
Haneul Jang (Korea Institute of Industrial Technology)

- 10:40 SA03 **Sintering Mechanism of Bimodal Nanopowders**
Jai-Sung Lee, Sunyoung Lee
Hanyang University
- 11:00 SA04 **Green Consolidation of Ceramics and Ceramic-Composites: Progress and Perspective**
Muhmood ul Hassan¹, Ho Jin Ryu^{1,2}
Korea Institute of Advanced Science and Technology
- 11:20 SA05 **Controlling the Electronic conductivity in Silver Nanowire-transparent Electrode made from Wasted Scraps**
Nam Hun Kwon, Gwang Hee Lee, Keun Hyuk Ryu, Kun-Jae Lee
Dankook University
- 11:40 SA06 **Simple ways to verify short-range-order strengthening in high-entropy alloys**
J. B. Seol¹, J. W. Bae², Z. Li³, J. G. Kim^{2,3}, H. H. Lee⁴, W.-S. Ko⁵, H. S. Kim²
^{1,2,4}Pohang University of Science and Technology,
³Max-Planck-Institut für Eisenforschung, ⁵University of Ulsan

Oral Session

Thursday, November 7

Island Ballroom 1&2

▶ Plenary Lecture

Chair: Jai-Sung Lee (Hanyang University)
Chang-Kyu Rhee (Korea Atomic Energy Research Institute)

- 13:00 **PL02** **Advanced Materials for Functional Application prepared by Powder Metallurgy - Recent developments at Fraunhofer IFAM Dresden**
Thomas Weissgaerber
Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM Dresden
- 13:40 **PL03** **POSCO's Venture Platform (Startup Eco System) Based on Open Collaboration**
Seong Jin Park
POSCO

▶ Materials Research in Defense Science and Technology I

Chair: Sung Ho Lee (Agency for Defense Development)
Kee Su Lee (Agency for Defense Development)

- 14:10 **SA-K6** **Research Trends in Defense Science and Technology at Agency for Defense Development**
Seong-Taek Lim
Agency for Defense Development
- 14:30 **SA07** **A Study on Infrared Characteristics of Low Emissivity Paints Using Metal Flakes**
Joonmo Ahn, KyungJin Jung
Agency for Defense Development
- 14:50 **SA08** **Development of superior thermal protective coatings on carbon composite**
Soobin Bae, Jung-Min Lee, Nam Choon Cho, Yeontae Kim, Hyung Ik Lee
Agency for Defense Development
- 15:10 **SA09** **A study on the catalytic properties of CGO support catalysts for methanol steam reforming**
Junghun Lee, Eunyeong Choi, Hyunjin Ji, Seongho Yang
Agency for Defense Development
- 15:30 **SA10** **Electrothermal properties and RF transmittance of spray-coated CNT thin film for radome de-icing application**
Jun Hyuk Jung, Jiwon Hong, Youngryeul Kim, Seok-Min Yong,
Jinwoo Park, Seung Jun Lee
Agency for Defense Development

Island Ballroom 1&2

► Materials Research in Defense Science and Technology II

Chair: Youngmoo Kim (Agency for Defense Development)

- 15:50 SA11 **Development and Ballistic Application of High Hardness Steels**
Hong-Kyu Kim, Yong-Jin Kim, Jin-Hee Ham, Tae-Won Park, Young-Beum Song,
Sung-Suk Hong
Agency for Defense Development
- 16:10 SA12 **Requirements for Characterization of Additive Manufacturing in Aerospace**
Jongkee Ahn, Dongyeop Lee, Jongseop Shin
Hanwha Aerospace
- 16:30 SA13 **Additive manufacturing of Ti-6Al-4V for military application**
Young-Sam Kwon
Cetatech Co. Inc
- 16:50 SA14 **Development of Refractory Based Superalloys for Next Generation**
Seong Lee, Jung Hyo Park, Donghoon Kim, Youngmoo Kim, Sung Ho Lee
Agency for Defense Development

Island Ballroom 3

► Nano Materials Processing for Energy Driving & Converting System I

Chair: Hwi-Jun Kim (Korea Institute of Industrial Technology)
Jung-Goo Lee (Korea Institute of Materials Science)

- 09:30 SB-I1 **Fe-based soft magnetic amorphous powders fabricated by high-pressure gas-atomization process**
Yong-Jin Kim¹, Jae Won Jeong¹, Dong-Yeol Yang¹, Ki Bong Kim¹, Tae-Soo Lim¹,
Sangsun Yang¹, Min Ha Lee², Hwi Jun Kim²
¹Korea Institute of Materials Science, ²Korea Institute of Industrial Technology
- 09:50 SB-I2 **Recent developments of advanced hard magnetic powders**
Jongryoul Kim
Hanyang University
- 10:10 SB07 **Anisotropic consolidation behavior of nano-grain RE-Fe-B powders**
Hee-Ryoung Cha¹, Jae-Gyeong Yoo¹, Ga-Yeong Kim¹, Youn-Kyoung Baek¹,
Hae-Woong Kwon², Jung-Goo Lee¹
¹Korea Institute of Materials Science, ²Pukyong National University

Oral Session

Thursday, November 7

Island Ballroom 3

▶ Nano Materials Processing for Energy Driving & Converting System II

Chair: Min-Ha Lee (Korea Institute of Industrial Technology)
Jae Won Jeong (Korea Institute of Materials Science)

- 10:40 SB08 Optimization of the post-sintering annealing temperature for the multi-main phase Nd-Ce-Fe-B sintered magnet**
Kyoung-Hoon Bae¹, Sang-Sun Yang¹, Ji-Hun Yu¹, Jung-Goo Lee¹, Dong-Hwan Kim²
¹Korea Institute of Materials Science, ²Star Group
- 11:00 SB09 High-Coercivity Epsilon Iron Oxides for Millimeter-Wave Absorption**
Youn-Kyoung Baek, Jung-Goo Lee, Min Ji Pyo
Korea Institute of Materials and Science
- 11:20 SB10 Effect of different rare earth elements substitution on hot deformation behavior of Nd-Fe-B magnet**
Ga-Yeong Kim^{1,2}, Hee-Ryoung Cha¹, Youn-Kyoung Baek¹, Dong-Hwan Kim³,
Yang-Do Kim², Jung-Goo Lee¹
¹Korea Institute of Materials Science, ²Pusan National University, ³Star Group Ind. Co

▶ Plenary Lecture (Island Ballroom 1&2)

- 13:00~14:10** Dr. Thomas Weissgaerber, Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM Dresden
Prof. Seong Jin Park, POSCO

▶ Powder Materials Processing I

Chair: Kyoung-Hoon Bae (Korea Institute of Materials Science)
Jin Kyu Lee (Kongju National University)

- 14:10 SB11 Morphological effect of nano-Carbon reinforcements on grain growth of copper matrix composites at high temperatures**
Haneul Jang^{1,3}, Min-Ha Lee¹, Hyejung Chang², Hyunjoo Choi³
¹Korea Institute of Industrial Technology, ²Korea Institute of Science and Technology, ³Kookmin University
- 14:30 SB12 Additive Manufacture of 3 inch Nuclear Safety Class 1 Valve Items**
Suk Hoon Kang¹, Chang-Kyu Rhee¹, Won Hee Lee², Nam-Gyu Park³, Hee-Sung Ann⁴
¹Korea Atomic Energy Research Institute, ²Samshin Limited, ³KEPCO Nuclear Fuel Company, ⁴BEES

Island Ballroom 3

- 14:50 SB13 Size Reduction of Gallium-based Particle by Comminution for Microfluid Application**
Reza M. Ulum, Wahyuaji N. Putra
Universitas Indonesia
- 15:10 SB14 The Effect of Sodium Carbonate and Calcium Oxide Addition to the Roasting of Ferronickel Slag with Temperature and Composition Variation**
Reza Miftahul Ulum, Johny Wahyuadi S., Charlotte S. Agnetia
University of Indonesia
- 15:30 SB15 Effect of Powder Size and Composition on the Mechanical Properties of Cu-Fe-C Alloys**
Sardar Farhat Abbas¹, Taek-Soo Kim²
¹University of Science and Technology, ²Korea Institute of Industrial Technology

► Powder Materials Processing II

Chair: Sangsun Yang (Korea Institute of Materials Science)
Min Woo Lee (Korea Institute of Industrial Technology)

- 15:50 SB16 Effect of Surfactant Addition on TiO₂ Nanofluid as Quench Medium in Heat Treatment Process of S45C Medium Carbon Steel**
Wahyuaji N. Putra, F. Muhammad, C. Ramadhani, I. Fahmy, S. Harjanto
Universitas Indonesia
- 16:10 SB17 Preliminary Study of WPCB Powder as Reductor Agent in Indonesian Nickel Ore Processing Characterized by using Thermal Analysis**
Reza Miftahul Ulum, Sri Harjanto, Dimas Ananda Radhitya
Universitas Indonesia
- 16:30 SB18 Effect of Aspect Ratio on Compressive Force Distribution in the Iron Ore Briquette**
Kang-Min Kim, Jong-Ho Bae, Jeong-Whan Han
Inha University
- 16:50 SB19 Effect of Heat Treatment on the Microstructure, Wear, Tensile and Fatigue properties of AISi10Mg alloy manufactured by Selective Laser Melting Process**
Tae-Hyun Park¹, Min-Seok Baek¹, Yongho Sohn², Kee-Ahn Lee¹
¹Inha University, ²University of Central Florida

Oral Session

Thursday, November 7

Wind Hall

► Presentation Competition for Shinhan Diamond Award I

Chair: Sangsun Yang (Korea Institute of Materials Science)
Hyun Seon Hong (Sungshin Women's University)

- 09:00 SC08 Prediction of density in selective laser melting using neural networks**
Da Seul Shin, Chi Hun Lee, Seong Jin Park
Pohang University of Science and Technology
- 09:15 SC09 Manufacturing, Microstructure and Wear Properties of New Fe-Mo-Cr-C-B Metallic Glass Coating Layers Fabricated by Various Thermal Spray Processes**
Gi-Su Ham¹, Kyoung-Wook Kim¹, Geun-Sang Cho², Paul Kim², Kee-Ahn Lee¹
¹Inha university, ²Kolon industry
- 09:30 SC10 Microstructure and Macroscopic Properties of Brazing Filler Metal for Multi-Layer Cladding Electrical Contact Material Manufactured by Thermal Spray**
Seong-June Youn¹, Young-Kyun Kim¹, Joo-Hyun Park², Oh-Jib Kwon², Kee-Ahn Lee¹
¹Inha University, ²LT Metal
- 09:45 SC11 Spark plasma sintering behavior of Nb-Mo-Si based in situ composite powders fabricated by hydrogenation-dehydrogenation reaction**
Ki Beom Park^{1,2}, Sung Yong Lee^{1,2}, Jaeho Choi², Yanghoo Kim¹, Hyung-Ki Park¹
¹Korea Institute of Industrial Technology, ²Gangneung-Wonju National University
- 10:00 SC12 Preparation of SKD11-TiC composite pre-alloyed metal powder and characterization of microstructure and mechanical properties of sintered metal**
Dong Seon Gwak¹, Hyung-Ki Park¹, Kwangsuk Park¹, Seung-Min Yang¹, Dae Ha Kim², Taeg-Woo Lee¹
¹Korea Institute of Industrial Technology, ²DAT Alloytech
- 10:15 SC13 Computational analysis for embedding sensors into metal by additive manufacturing**
Minsik Lee¹, Kyung Tae Kim¹, Ji-Hun Yu¹, Sangsun Yang¹, Hyokyung Sung², Im Doo Jung¹
¹Korea Institute of Materials Science, ²Gyeongsang National University

Wind Hall

► Presentation Competition for Shinhan Diamond Award II

Chair: Si Young Chang (Korea Aerospace University)
Hanshin Choi (Korea Institute of Industrial Technology)

- 10:40 SC14 Machine learning on categorizing defects in metal 3D Printing**
Eun-ah Kim^{1,2}, Seokrok Lee¹, Kwonil Kim³, Dongyeol Yang¹, Hak-sung Lee¹,
Ji-Hun Yu¹
¹Korea Institute of Materials Science, ²Pusan National University, ³C51
- 10:55 SC15 Additive manufacturing of metal mold for speed factory**
Seokrok Lee¹, Eun-ah Kim^{1,2}, Dongyeol Yang¹, Hak-sung Lee¹, Ji-Hun Yu¹
¹Korea Institute of Materials Science, ²Pusan National University
- 11:10 SC16 Effect of Edge Oxidized Graphene on the properties of N-type thermoelectric thick film**
Gi Seung Lee^{1,3}, Seong Eun Yang², Kyung Tae Kim¹, Byung Kee Kim³
¹Korea Institute of Materials Science, ²Ulsan National Institute of Science and Technology, ³University of Ulsan
- 11:25 SC17 Effect of TiC addition on microstructure and mechanical properties of nanocrystalline FeMn alloy prepared by spark plasma sintering**
Junhyub Jeon, Seunggyu Choi, Namhyuk Seo, In-Jin Shon, Seok-jae Lee
Chonbuk National University
- 11:40 SC18 Microstructural and mechanical characteristics of non-equiatomic high entropy alloy FeMnCoCr prepared by spark plasma sintering**
Namhyuk Seo, Junhyub Jeon, Seunggyu Choi, In-Jin Shon, Seok-jae Lee
Chonbuk National University

► Plenary Lecture (Island Ballroom 1&2)

- 13:00~14:10** Dr. Thomas Weissgaerber, Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM Dresden
Prof. Seong Jin Park, POSCO

Oral Session

Thursday, November 7

Wind Hall

► Rare Earth and Energy Materials

Chair: Bum Sung Kim (Korea Institute of Industrial Technology)
Min-Ha Lee (Korea Institute of Industrial Technology)

- 14:10 SC19 Facile route for reactive oxide coating on high-chromium steels as a protective layer for metal-supported solid oxide fuel cell applications**
Hyeondeok Jeong¹, Su-Hyun Baek^{1,2}, Kyung Min Kim^{1,2}, Sung-Soo Ryu¹
¹Korea Institute of Ceramic Engineering and Technology, ²Hanyang University
- 14:25 SC20 Grain boundary modification of hot-deformed magnet produced using Nd-Fe-B HDDR powder**
Jae-Gyeong Yoo^{1,2}, Hee-Ryoung Cha¹, Youn-Kyoung Baek¹, Dong-Hwan Kim³,
Yang-Do Kim², Jung-Goo Lee¹
¹Korea Institute of Materials Science, ²Pusan National University, ³Star Group Ind. Co
- 14:40 SC21 Effect of scrap size in rare earth magnet on the extraction behavior of heavy rare earth elements by liquid metal extraction**
Sun-Woo Nam^{1,3}, Sang-Min Park¹, Sang-Hoon Lee¹, Do Hyang Kim³, Taek-Soo Kim^{1,2}
¹Korea Institute of Industrial Technology, ²University of science and technology,
³Yonsei University
- 14:55 SC22 Degradation Characterization and Mechanisms of Warm Rolled Mg-1.6Gd with 95% Reduction Ratio for Biodegradable Implant Applications**
Ahmad Zakiyudin¹, Arya Abietta Irawan¹, Oknovia Susanti², Sri Harjanto¹
¹Universitas Indonesia, ²Universitas Andalas
- 15:10 SC23 Effect of reaction time and Mg input on the extraction of Dy from (Nd,Dy)-Fe-B permanent magnet**
Sang-Min Park^{1,2}, Sun-Woo Nam¹, Sang-Hoon Lee^{1,2}, Soong-Keun Hyun²,
Taek-Soo Kim¹
¹Korea Institute of Industrial Technology, ²Inha University
- 15:25 SC24 Effect of Nd-Cu alloy infiltration on plastic deformed NdFeB magnet fabricated by gas atomized powder**
Juyoung Cho^{1,2}, Yong-Ho Choa², Taek-Soo Kim^{1,3*}
¹Korea Institute of Industrial Technology, ²Hanyang University,
³University of Science and Technology

Wind Hall

▶ Industry Announcement

Chair: Yong-Ho Choa (Hanyang University)
Byung Yoon Lee (Changsung Co.)

- 15:50** **Technology solution in Fraunhofer**
Chang Kyu Rhee
Korea Atomic Energy Research Institute
- 16:00** **SC25** **A Study on the Electrical Resistance Properties of Ag Coated Copper for Conductive Bonding Film by Process Variables**
M. S. Kang, M. J. Jang, S. C. Jeong, B. Y. Lee, G. B. Choi
Changsung Corporation
- 16:10** **SC26** **Global PM Market Trends & Future**
Jin-hyeon Kim, Molin Linnea
Höganäs Korea
- 16:20** **SC27** **Development of Automotive Parts with PM Technology**
Byongjoon Park, Donahan Kim, Hongkyu Kim
Halla Stackpole Co., Ltd
- 16:30** **SC28** **Trends and opportunities of metallic and ceramic powders for thermal spray coating**
Jong-ha Lee, Katherine Chen
Höganäs Korea
- 16:40** **SC29** **Material Design Metal 3D Printer**
DaeJung Kim
INSSTEK, INC
- 16:50** **SC30** **Development of Ni Alloy Powder for Additive Manufacturing**
Seung Chun Chang
VDM Metals Korea
- 17:00** **SC31** **Boundary structural transition and grain growth behavior during sintering of nano-grained nickel**
Suk-Joong L. Kang
Korea Advanced Institute of Science and Technology

Oral Session

Friday, November 8

Island Ballroom 1

► Powder Materials Processing III

Chair: Suk Hoon Kang (Korea Atomic Energy Research Institute)
Sung-Soo Ryu (Korea Institute of Ceramic Engineering and Technology)

- 09:30 SA15 Extraction of Tantalum Powder by Magnesium Reduction of Tantalum Pentoxide**
Seon-Min Hwang^{1,2}, Jei-Pil Wang², Dong-Won Lee¹
¹Korea Institute of Materials Science, ²Pukyong National University
- 09:50 SA16 Effect of the milling time and sintering condition on alloying sequence and mechanical properties of high entropy Ta-Nb-V-W-Ti alloy**
Da Hye Song¹, Yeong Gyeom Kim¹, Sang Jun Kim², Eun Soo Park², Jin Kyu Lee¹
¹Kongju National University, ²Seoul National University
- 10:10 SA17 Characterization of Biocompatible TiZrNbTaMo High Entropy Alloy Fabricated by Powder Metallurgy Process**
Hyun-Su Kang, Ki Beom Park, Jong-In Choi, Tae-wook Na, Hyung-Ki Park
Korea Institute of Industrial Technology

► Powder Materials Processing IV

Chair: Min Woo Lee (Korea Institute of Industrial Technology)
Haneul Jang (Korea Institute of Industrial Technology)

- 10:40 SA18 Effects of highly anisotropic microstructure on tensile properties of additively manufactured 1%C-CoCrFeMnNi high-entropy alloy**
Jeong Min Park¹, Jungho Choe², Hyung Keun Park¹, Sujung Son¹, Jaimyun Jung¹, Taek-Soo Kim³, Ji-Hun Yu², Jung Gi Kim⁴, Hyoung Seop Kim¹
¹Pohang University of Science and Technology, ²Korea Institute of Materials Science
³Korea Institute of Industrial Technology, ⁴Gyeongsang National University
- 11:00 SA19 Microstructure, Tensile and Impact Toughness of Inconel 718 Alloy Manufactured by Selective Laser Melting**
So-Yeon Park, Tae-Hoon Kang, Kee-Ahn Lee
Inha University
- 11:20 SA20 Qualification/certification as chasm for industrial AM adoption**
Hanshin Choi, Wonsik Lee, Sehyun Koh, Jin Man Jang
Korea Institute of Industrial Technology

Oral Session

Friday, November 8

Island Ballroom 3

► **Magnetic Materials**

Chair: Min Woo Lee (Korea Institute of Industrial Technology)
Youngkyun Kim (Institute for Advanced Engineering)

- 09:30 SC32 Basic Study on the Development of Iron Soft Magnetic Powders for Eco-Friendly Automotive Application**
Joonchul Yun¹, Hyungon Lyu¹, Jinwoo Kim¹, Wonseog Koo¹, Shingyu Kim²
¹Hyundai Steel, ²Hyundai Motor
- 09:50 SC33 Effect of Mo addition on magnetic and microstructural properties of amorphous Fe-based powder with high magnetic flux density**
Kyoung-Hoon Bae, Young-Gyun Nam, Ki Bong Kim, Sangsun Yang, Jae Won Jeong, Yong-Jin Kim
Korea Institute of Materials Science
- 10:10 SC34 Fabrication of porous structures and their influence on thermoelectric properties of p-type Bi_{0.5}Sb_{1.5}Te₃ alloys**
Cheenepalli Nagarjuna, JunWoo Song, Peyala Dharmiah, Soon-Jik Hong
Kongju National University

► **Powder Injection Molding**

Chair: Youngkyun Kim (Institute for Advanced Engineering)
Se Eun Shin (Suncheon National University)

- 10:40 SC35 Investigation for Fabrication of Honeycomb Shaped 1-3 Piezoelectric Microstructures by Powder Injection Molding**
Jae Man Park, Hyeokjun Kwon, Seong Jin Park
Pohang University of Science and Technology
- 11:00 SC36 Fabrication and properties of Si₃N₄ based ceramics using low cost combustion synthesized powders**
Chang Woo Gal¹, Ki Woung Song¹, Woon hyung Baek², Hyung Kyu Kim²,
Dae Keun Lee², Ki Wook Lim², Seong Jin Park¹
¹Department of Mechanical Engineering, Pohang University of Science and Technology,
²Korea Electronic Material Co., Ltd

Poster Session

Thursday, November 7

Hallway

12:00~16:30

Chair: Hwi-Jun Kim, Korea Institute of Industrial Technology

▶ Green and Smart Convergence Materials in SEOULTECH

SP001 Mechanical properties and Corrosion resistance of Friction Stir Processed AZ31 Magnesium AlloyJin-Tae Hwang¹, Dong-O Kim¹, Sang-Hyo Kim¹, Eun-Woo Kim¹, Jae-Yeon Kim²,
Chang-Yong Hyun¹, Jai-Won Byeon¹^{1,2}Seoul National University of Science and Technology**SP002 Thermoelectric properties of polycrystalline SnSe prepared by powder metallurgical route**Ye Jun Yun¹, Pureunsol Park¹, Ho Jun Lee¹, Hyeunhwan An², Jongmin Byun^{1,3}^{1,3}Seoul National University of Science and Technology, ²University of Nevada**SP003 Synthesis of porous activated carbon as electrode materials for high performance supercapacitors**Ki-Wook Sung¹, Dong-Yo Shin², Hyo-Jin Ahn^{1,2}^{1,2}Seoul National University of Science and Technology**SP004 Effect of Pyrolysis Conditions on the Physicochemical Properties of Graphitic Carbon Nitride for Visible-light-driven Photocatalytic Degradation**

Cheol-Hui Ryu, Jeong Hyun Kim, Myeong-Jun Ji, Eung-Ryong Kim, Young-In Lee

Seoul National University of Science and Technology

SP005 Synthesis and Physicochemical Properties of Ti³⁺ Self-doped Titanium Dioxide Nanofibers Using a Reductant-assisted Electrospinning Process

Eung-Ryong Kim, Myeong-Jun Ji, Jung-hyun Kim, Chul-Hui Ryu, Young-In Lee

Seoul National University of Science and Technology

SP006 Precipitation of ZnFe₂O₄ spinel phase and its effect on the sintering and grain growth of SnO₂Min Seok Kim¹, Geon Hyeong Park¹, Young Sik Cho¹, Jin Rye Kim¹, Ju-Yeon Han¹,
Hyun-Ji Kang¹, Sung-Tag Oh¹, Doh-Hyung Riu¹, Kwan-hyeong Kim²¹Seoul National University of Science and Technology, ²Ceon Co**SP007 Atomic layer deposition of p-type lithium-doped tin monoxide using Sn(dmamp)₂, Li(btsa) and H₂O**Myeong Gil Chae¹, Bo Keun Park², Taek-Mo Chung², Jeong Hwan Han^{1,3}^{1,3}Seoul National University of Science and Technology,²Korea Research Institute of Chemical Technology(KRICT)

SP008 Fabrication of Aluminum-based Metal Matrix Composites Reinforced by High-entropy Alloy Powder

Pureunsol Park¹, Ho Jun Lee¹, Ye Jun Yun¹, Won June Choi², Min Sang Kim², Jongmin Byun^{1,3}
^{1,3}Seoul National University of Science and Technology, ²Hanyang University

SP009 Atomic interface engineering of thermoelectric materials by atomic layer deposition

Jae Wook Lee¹, Myeong Jun Jung¹, Seung Chul Shin¹, Ju-Yeon Han¹, Myeong Jun Ji¹,
Seung Hee Ko², Jong Min Byun^{1,3}, Jeong Hwan Han^{1,3}, Young-In Lee^{1,3}, Doh-Hyung Riu^{1,2},
Sung-Tag Oh^{1,3}, Byung Joon Choi^{1,3}
^{1,2,3}Seoul National University of Science and Technology

SP010 The effect of post deposition annealing on the properties of SrRuO₃ Thin Films deposited by Rf Magnetron Sputtering

Eun Chong Ko¹, Jeong Hwan Han^{1,2}
^{1,2}Seoul National University of Science and Technology

SP011 Hydrogen Reduction Behavior and Microstructure Characterization of CuO-Co₃O₄ Powder Mixtures

Eui Seon Lee, Ju-Yeon Han, Hyunji Kang, Sung-Tag Oh, Chang-Yong Hyun
Seoul National University of Science and Technology

SP012 Dilatometric Analysis of the Sintering Behavior of Bi₂Te₃ Thermoelectric Powders

Ju-Yeon Han¹, Jong Min Byun¹, Young-In Lee¹, Byung Joon Choi¹, Hogyoung Kim²,
Sung-Tag Oh¹
^{1,2}Seoul National University and Science and Technology

SP013 Densification of Tungsten Powder Compact by Ultra-High-Pressure Pressing and Spark Plasma Sintering

Ju-Yeon Han¹, Gyuwhi Lee¹, Eui Seon Lee¹, Minseok Kim¹, Geon Hyeong Park¹,
Young-Keun Jeong², Sung-Tag Oh¹
¹Seoul National University and Science and Technology, ²Pusan National University

► High Entropy Alloys/Materials**SP014 Phase study of heat treated CoCrFeNiTi_{0.5} high entropy alloy powder**

Muhammad Aneeq Haq^{1,2}, Su Noh^{1,3}, Eom Nu Si A¹, Bum Sung Kim^{1,2}
¹Korea Institute of Industrial Technology, ²University of Science and Technology,
³Hanyang University

SP015 Wave Absorption Property of High Entropy Alloy Fabricated by Sol-Gel Process

Su-won Yang, Jeong-gon Kim, Kwang-pil Jeong, Jin-Hyuk Choi
Incheon National University

Poster Session

Thursday, November 7

- SP016 Fabrication and Mechanical Properties of VC-CoCrFeMnNi High Entropy Alloy by Powder High-Pressure Pressing**
Nhung Thi-Cam Nguyen¹, Peyman Asghari-Rad^{1,2}, Soon-Jik Hong³, Hyoung Seop Kim^{1,2}
^{1,2}Pohang University of Science and Technology(POSTECH), ³Kongju National University
- SP017 High-Entropy and Complex Concentrated TiMoVCrZr Alloys Designed for Metallic Biomaterials: Microstructure and Corrosion Properties**
Hocheol Song, Seongi Lee, Seungheon Lee, Kwangmin Lee
Chonnam National University
- SP018 Effects of Spark Plasma Sintering Temperatures on the Microstructure and Mechanical Properties of FeCoNiMnCu High Entropy Alloy**
Myoung Jin Chae, Min Chul Oh, Byungmin Ahn
Ajou University
- SP019 Superior tensile properties of 1%C-CoCrFeMnNi high-entropy alloy additively manufactured by selective laser melting**
Jeong Min Park¹, Jungcho Choe², Jung Gi Kim³, Jae Wung Bae¹, Jongun Moon¹, Taek-Soo Kim⁴, Sangsun Yang², Kyung Tae Kim², Ji-Hun Yu², Hyoung Seop Kim¹
¹Pohang University of Science and Technology, ²Korea Institute of Materials Science, ³Gyeongsang National University, ⁴Korea Institute of Industrial Technology
- SP020 Mechanical properties and microstructural evolution of Al-Cr-Fe-Mn Medium Entropy Alloy**
Hyeonseok Kwon, Jongun Moon, Hyoung Seop Kim
Pohang University of Science and Technology
- ▶ **Nano Materials Processing for Energy Driving & Converting System**
- SP021 Aluminum/Carbon fiber hybrid material for EMI shielding via mechanical process**
Jungjoon Kim, Yeonjoo Lee, Hyunjoo Choi
Kookmin University
- SP022 Shape Control of α -Fe₁₆N₂ Magnetic Particles in Silica Shell**
Min Ji Pyo^{1,2}, Hee Lack Choi², Youn Kyoung Baek¹
¹Korea Institute of Materials Science, ²Pukyong National University
- SP023 Improvement of light extraction efficiency of light emitting diode by MgF₂ nanoparticle coating layer**
Byung-kwan Song¹, Young-Rae Cho², Young-Kuk Kim¹
¹Korea Institute of Materials Science, ²Pusan National University

Poster Session

Thursday, November 7

- SP024** **Synthesis of Fe-based amorphous alloys with high saturation magnetization**
Hwijun Kim, YoungSin Choi, Minwoo Lee
Korea Institute of Industrial Technology
- SP025** **Effect of insulating layers on microstructure and soft magnetic properties of Fe-Si-Al-P soft magnetic cores**
Minwoo Lee¹, Taesuk Jang², Hwijun Kim¹
¹Korea Institute of Industrial Technology, ²SunMoon University
- SP026** **Study on the increase of forming density of soft magnetic parts using amorphous powder**
Young Kyun Kim, Gwang Mook Choi
Institute for Advanced Engineering
- SP027** **Effect of nano crystallization annealing on the magnetic properties of FeSiBPCu amorphous powders manufactured by modified water atomization process**
DoHun Kwon, EunJi Cha, HwiJun Kim
Korea Institute of Industrial Technology
- SP028** **Soft magnetic properties of FeSiAlP powders with insulating layers of chromium phosphate**
EunJi Cha, DoHun Kwon, Hwijun Kim
Korea Institute of Industrial Technology
- SP029** **Effect of La additive on soft magnetic properties and amorphous forming ability of Fe-Si-B-P amorphous alloys**
Youngsin Choi^{1,2}, Jung Kwon Lee³, Dae Woong Jung³, Joo Hyun Park², Hwijun Kim¹
¹Korea Institute of Industrial Technology, ²Hanyang University, ³SunMoon University
- SP030** **Thermal Plasma-fabricated FeCo Nanorods with High Magnetic Permeability as Radar Absorbing Material for Stealth Applications**
Mi Se Chang¹, Byeongjin Park, Jina Kwak, Suk Jin Kwon, Sangsun Yang¹, Sang-Bok Lee², Jae Won Jeong¹
^{1,2}Korea Institute of Materials Science
- SP031** **Selective laser melting vitrification of Fe-based soft magnetic alloys in the help of double-scanning-induced compositional homogeneity**
Yeong Gyun Nam¹, Mi Se Chang¹, Bonuk Koo¹, Sangsun Yang¹, Ji Hun Yu², Jae Won Jeong¹
^{1,2}Korea Institute of Materials Science
- ▶ **Advanced Functional Materials**
- SP032** **Amorphous WO₃ film Embedded with Crystalline WO₃ Nanofibers for Enhanced Electrochromic Application**
Yeong-Been Oh, Yong-Ho Choa
Hanyang University

Poster Session

Thursday, November 7

- SP033** Enhancement of through-plane thermal conductivity via using of core-shell like hybrid fillers in polymer composites
Minseob Lim¹, Seung han Ryu², Yong-Ho Choa¹
^{1,2}Hanyang University
- SP034** Graphene-incorporated dual functional coatings and their electrically conductive and anti-corrosive properties
Han Kim, Hyemin Lee, Hyo-Ryoung Lim, Hong-Baek Cho, Yong-Ho Choa
Hanyang University
- SP035** Effect of Titanium Addition on Tungsten Oxide Dispersion Strengthened Alloy
Chun Woong Park¹, Won Jun Choi¹, Jong Min Byun², Young Do Kim¹
¹Hanyang University, ²Seoul National University of Science and Technology
- SP036** The effect of magnetocrystalline anisotropy in magnetocaloric property of MnFe-based alloys
A.Y. Lee^{1,2}, S.Y. Kim¹, H.N. Jang¹, Y.D. Kim², M.H. Lee^{1*}
¹Korea Institute of Industrial Technology, ²Hanyang University
- SP037** Direct Synthesis of Black TiO₂ Microspheres by Ultrasonic Spray Pyrolysis and its Photocatalytic Activity in the Visible light region
Myeong-Jun Ji, Eung-Ryong Kim, Jeong-Hyun Kim, Cheol-Hui Ryu, Young-In Lee
Seoul National University of Science and Technology
- SP038** Improvement of Microwave Absorption Characteristics by Coating Layer in Substituted U-type Ferrites
Kwang-pil Jeong¹, Jeong-gon Kim¹, Su-won Yang¹, Jin-hyuk Choi¹, Seung-young Park²
¹Incheon National University, Incheon, ²Korea Basic Science Institute
- SP039** Effect of alloying elements on corrosion behavior of Fe-based amorphous alloys under long-term acid immersion environment
Song-Yi Kim, A-Young Lee, Haneul Jang, Min-Ha Lee
Korea Institute of Industrial Technology
- SP040** Amorphous Hydrogenated DLC-coated Ti-6Al-4V ELI Alloy with TiCN Interlayer Prepared by rf-PECVD: Microstructure and Mechanical Properties
Jaemin Park, Seokil Kang, Kwangmin Lee
Chonnam National University
- SP041** Mechanical Properties and Corrosion Behavior of Aged Ti-4Mo-4Cr-X (X=Sn, V, and Zr) Alloys for Metallic Biomaterials
Seunghoon Lee, Gunhee Lee, Kwangmin Lee
Chonnam National University

- SP042 Phase Transformation and Corrosion Characteristics of Ti-(50-x)Ni-xCu (x-3, 6, 9at%) Shape Memory Alloys**
Jonghyeok Park, Sanghyun Rho, Kwangmin Lee
Chonnam National University
- SP043 Study of extrude-ability on different extrusion temperature of Al-Zn-Cu based alloy**
Yong-Ho Kim, Hyo-Sang Yoo, Hyeon-Taek Son
Korea Institute of Industrial Technology
- SP044 Investigation of Scale Cracking on TAl Surface by Heat treatment process**
Hyunseok Yang^{1,2}, Woochul Jung¹, Man-Sik Kong¹, Changhee Lee²
¹Institute for Advanced Engineering, ²Hanyang University
- SP045 Enhanced thermoelectric performances of BiTe-metal nanoparticle composites**
Sang-Seok Lee¹, Tae-Hoon Kong¹, Geon-Ju Choi¹, Sung Jong Yoo², Il-kyu Park¹
¹Seoul National University of Science and Technology, ²Korea Institute of Science and Technology
- SP046 Performance modulation of triboelectric nanogenerators by controlling the surface morphologies of PVDF nanofibers**
Tae-Hoon Kong, Geon-Ju Choi, Il-kyu Park
Seoul National University of Science and Technology
- SP047 Performance Enhancement of PVDF Nanofiber-based Triboelectric Nanogenerators by Nanocomposite Structures**
Geon-Ju Choi, Chan-Woo Jeon, Il-Kyu Park
Seoul National University of Science and Technology
- SP048 CO₂ capture property of CaO sorbent in molten salt media**
Sung-Wook Kim, Min Ku Jeon, Kirak Lee
Korea Atomic Energy Research Institute
- SP049 Capacitance-voltage characteristics of zirconium oxide for nuclear cladding materials**
Chan-Woo Jeon¹, Sang-Seok Lee¹, Hyun-Gil Kim², Il-Kyu Park¹
¹Seoul National University of Science and Technology, ²Korea Atomic Energy Research Institute
- SP050 Shape Memory Characteristics of Non-toxic Ti-Zr-Mo-Sn Biomaterials**
Yeon-wook Kim
Keimyung University

Poster Session

Thursday, November 7

SP051 Preparation and Characteristics BaSO₄/TiO₂ Nanocomposite Coating Film by Electrophoretic Deposition According to Particle Size on Titanium Substrate
Gwang Hee Lee¹, Keun Hyuk Ryu¹, Nam Hun Kwon¹, Min Kang², Ji Hwan Park², Kun-Jae Lee¹
¹Dankook University, ²Material Technical Innovation Group (MTIG)

SP052 Electrospinning of Antimony Doped Tin Oxide (ATO) Nanoparticle Dispersion for Transparent and Conductive Films
Young-Sang Cho, Minho Han, Seung Hee Woo
Korea Polytechnic University

▶ Characterization and Modeling

SP053 Enlargement of melt-pool images captured by high-speed camera inside selective laser melting equipment using convolutional neural network
Ohjung Kwon
Korea Institute of Industrial Technology

SP054 Prediction of melt pool geometry and morphology in a laser powder bed fusion additive manufacturing process
Kyunghwan Jung, Kangmin Kim
Korea Institute of Industrial Technology

SP055 Microstructural evolution and Mechanical Properties of Continuously-welded T-bar
Jihoon Jang¹, Changsuk Yoon¹, Yongjae Lee¹, Sangik Lee², Dong-Geun Lee¹
¹Sunchon National University, ²KIDUCK INDUSTRY Co., Ltd

SP056 Density Function Theory Calculations on Work Function of Materials: A Review
Huynh Thanh-Nam¹, H. H. Nersisyan², Jong-Hyeon Lee^{1,2,3}
^{1,2,3} Chungnam National University

▶ High Performance Structural Materials

SP057 Fabrication and Evaluation of AA6061/AA5052/AA6061/AA5052 Multi-Layer Complex Sheet by Cold-Roll Bonding Process
Seong-Hee Lee
Mokpo National University

SP058 Fabrication of Densified Tungsten by Spark Plasma Sintering and Hot Isostatic Pressing
Gyuhwi Lee¹, Hyunji Kang^{1,2}, Young-Keun Jeong³, Sung-Tag Oh^{1,2}
^{1,2}Seoul National University of Science and Technology, ³Pusan National University

SP059 Phase- and Composition-controllable Binary-phased Magnetic Nanofibers
Jimin Lee, Jongryoul Kim, Yong-Ho Choa
Hanyang University

- SP060** **Microstructure, mechanical properties, electric and thermal conductivity of the as-extruded Al-2Zn-0.3Mg-xCu alloys**
Hyeon-Taek Son, Yong-Ho Kim, Hyo-Sang Yoo
Korea Institute of Industrial Technology
- SP061** **Effect of Fe Content on the Mechanical Properties and Thermal Conductivity of the Al-RE Alloys**
Hyo-Sang Yoo^{1,2}, Yong-Ho Kim¹, Hyeon-Taek Son¹
¹Korea Institute of Industrial Technology, ²Mokpo National University
- SP062** **Effect of TiN particles on bendability of martensitic steel with high-resolution digital image correlation method**
Dong Hyuk Kim¹, Yujin Seong¹, Jung Gi Kim¹, Min Hong Seo², Hyoung Seop Kim^{1,3,4}
^{1,3,4}Pohang University of Science and Technology (POSTECH), ²POSCO
- SP063** **Fabrication of Mo-Si-B alloys with La₂O₃ particle and the effect of La₂O₃ particle in Mo-Si-B alloys**
Won June Choi¹, Chun Woong Park¹, Jung Hyo Park², Jong Min Byun^{3*}, Young Do Kim¹
¹Hanyang University, ²Agency for Defense Development, ³Seoul National University of Science and Technology
- SP064** **Fabrication and Characterization of 10Cr-2W ODS Ferritic Steels for High Temperature Service Applications**
Wookjin Choi, Chanwoong Park, Ki-Baik Kim, Chang-Hee Han, Suk Hoon Kang, Sanghoon Noh
Korea Atomic Energy Research Institute
- SP065** **Strain Hardening Behavior in AlMg6 alloy in Bending Process by the Relationship between Hardness and Strength**
Kweon Hoon Choi^{1,2}, Bong Hwan Kim², Dabin Lee², Seung Yoon Yang², Nam Seok Kim², Seong Ho Ha², Young Ok Yoon², Hyun Kyu Lim², Shae Kim^{1,2}
¹Korea University of Science and Technology, ²Korea Institute of Industrial Technology
- SP066** **Microstructural Evolution and Processing Map of Al-(6-9)Mg-Al₂Ca Alloys by Hot Compression Test**
Nam Seok Kim^{1,2}, Bong Hwan Kim¹, Dabin Lee¹, Kweon Hoon Choi¹, Seung Yoon Yang¹, Seong Ho Ha¹, Young Ok Yoon¹, Hyun Kyu Lim¹, Shae Kim¹, Soong-Keun Hyun²
¹Korea Institute of Industrial Technology, ²Inha University
- SP067** **Microstructural Evolution and Mechanical Properties of Modified 7021 Alloys containing Trace of Al₂Ca in Hot Rolling Process**
Seung Yoon Yang^{1,2}, Bong Hwan Kim¹, Dabin Lee¹, Kweon Hoon Choi¹, Nam Seok Kim¹, Seong Ho Ha¹, Young Ok Yoon¹, Hyun Kyu Lim¹, Shae Kim¹, Young Jig Kim²
¹Korea Institute of Industrial Technology, ²Sungkyunkwan University

Poster Session

Thursday, November 7

- SP068 Tensile properties and restoration behavior of modified 5083 alloys with variation of Mg and Mn contents in hot-rolling process**
Dabin Lee^{1,2}, Bong Hwan Kim¹, Kweon Hoon Choi¹, Seung Yoon Yang¹, Nam Seok Kim¹, Seong Ho Ha¹, Young Ok Yoon¹, Hyun Kyu Lim¹, Shae Kim¹, Soong Keun Hyun²
¹Korea Institute of Industrial Technology, ²Inha University
- SP069 Effect of Fe, Si and Mn impurities on intermetallic formation in Al-4Mg binary alloy fabricated by conventional rolling process**
Dabin Lee^{1,2}, Bong Hwan Kim¹, Kweon Hoon Choi¹, Seung Yoon Yang¹, Nam Seok Kim¹, Seong Ho Ha¹, Young Ok Yoon¹, Hyun Kyu Lim¹, Shae Kim¹, Soong Keun Hyun²
¹Korea Institute of Industrial Technology, ²Inha University
- SP070 Comparative Assessment on Formability of Modified 7085 Alloy Fabricated by Combined Extrusion-Rolling Processes**
Seung Yoon Yang^{1,2}, Bong Hwan Kim¹, Dabin Lee¹, Kweon Hoon Choi¹, Nam Seok Kim¹, Seong Ho Ha¹, Young Ok Yoon¹, Hyun Kyu Lim¹, Shae Kim¹, Young Jig Kim²
¹Korea Institute of Industrial Technology, ²Sungkyunkwan University
- SP071 Characterization of oxide growth on Al-Mg alloy melts containing high content of Mg**
Seong-Ho Ha¹, Shah Abdul Wahid², Bong-Hwan Kim¹, Young-Ok Yoon¹, Hyun-Kyu Lim¹, Shae K. Kim^{1,2}
¹Korea Institute of Industrial Technology, ² University of Science and Technology
- SP072 Correlation of intergranular oxidation and Mg-based intermetallic phases in grain boundary of Al-Mg alloys containing third elements**
Shah Abdul Wahid¹, Seong-Ho Ha², Bong-Hwan Kim², Young-Ok Yoon², Hyun-Kyu Lim², Shae K. Kim^{1,2}
¹University of Science and Technology, ²Korea Institute of Industrial Technology
- SP073 Effect of grain size on internal oxidation of Al-Mg alloys at high temperature**
Young-Ok Yoon¹, Seong-Ho Ha¹, Shah Abdul Wahid², Bong-Hwan Kim¹, Hyun-Kyu Lim¹, Shae K. Kim^{1,2}
¹Korea Institute of Industrial Technology, ²University of Science and Technology
- SP074 Influence of Si addition on oxide layer growth of Al-Mg alloy containing high content of Mg in molten state**
Shae K. Kim^{1,2}, Seong-Ho Ha¹, Shah Abdul Wahid², Bong-Hwan Kim¹, Young-Ok Yoon¹, Hyun-Kyu Lim¹
¹Korea Institute of Industrial Technology, ²University of Science and Technology

▶ Powder Injection Molding

SP075 Effect of solvent extraction of binder on pore size in sintered part of TiH₂ feedstock

Gyeong-Uk Kim, Jin Man Jang, Hanshin Choi, Wonsik Lee
Korea Institute of Industrial Technology

SP076 Preliminary Study on the Metal Injection Molding Process with Oxide Dispersion Strengthened Steel

Sanghoon Noh¹, Suk Hoon Kang¹, Sangkyu Lee²
¹Korea Atomic Energy Research Institute, ²3D Controls Institute

SP077 Injection Molding Process Condition Recommender System Based on Neural Networks

C. H. Lee¹, M.-S. Jeong¹, S. K. Lee¹, S. K. Hwang¹, C. Y. Jae¹, J. S. Han², D. Lin³,
D. Y. Park¹
¹Korea Institute of Industrial Technology, ²Korea Institute of Machinery and Materials(KIMM),
³Samsung Electro-Mechanics

SP078 Comparative Study of Micro and Bimodal Feedstock in Powder Injection Molding

Jin Man Jang, Wonsik Lee, Hanshin Choi
Korea Institute of Industrial Technology

▶ Rare Earth and Energy Materials

SP079 Fabrication of U-10wt.%Zr-RE Fuel Slugs by Recycling of Metallic Fuel Scraps

Ki-Hwan Kim¹, Seung-Uk Mun², Seong-Jun Ha³, Seoung-Woo Kuk¹, Jeong-Yong Park¹
¹Korea Atomic Energy Research Institute, ²Chungnam National University, ³Yonsei University

SP080 Characterization between U-Zr-RE ternary alloy and Y₂O₃ slurry coated SiO₂ reaction layer at an elevated temperature

Seung-Uk Mun^{1,2}, Ki-Hwan Kim¹, Jeong-Yong Park¹, Seoung-Woo Kuk¹, Sun-Ig Hong²
¹Korea Atomic Energy Research Institute, ²Chungnam National University

SP081 Recovery of Indium from Waste Liquid Crystal Displays (LCD) through Solvent Extraction and Concentration

Mi-So Kim, Eun-Kyung Byun, You-Lim Lee, Geum-Ji Back, Hyun-Seon Hong
Sungshin Women's University

SP082 Effects of Process Parameters on Laser Ablation

Seong-Jun Ha^{1,2}, Ki-Hwan Kim², Seoung-Woo Kuk², Jeong-Yong Park², Young-Kook Lee¹
¹Yonsei University, ²Korea Atomic Energy Research Institute

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- SP083 Effect of pre-magnetizing of a base material on the grain-boundary-diffusion treatment of NdFeB magnets using dry powder sources**
J. K. Lee¹, D. W. Jung¹, M. W. Lee², H. J. Kim², D. H. Kim³, T. S. Jang¹
¹SunMoon University, ²Korea Institute of Industrial Technology, ³Star Group Ind. Co.,
- SP084 Synthesis of 1-dimensional NdFeB fiber using new reduction-diffusion process**
Nu Si A Eom¹, Su Noh¹, Haq Muhammad Aneeq^{1,2}, Bum Sung Kim^{1,2}
¹Korea Institute of Industrial Technology, ²University of Science and Technology
- SP085 Synthesis and microstructural effect on magnetic properties of Sm₂Fe₁₇N₃ nanomagnet**
Eun Jae Lee, Jimin Lee, Yong-Ho Choa
Hanyang University
- SP086 Characterization of Nd₂Fe₁₄B Fibers with Reduction Temperature**
Su Noh^{1,2}, Nu Si A Eom¹, Muhammad Aneeq Haq¹, Young Do Kim², Bum Sung Kim¹
¹Korea Institute of Industrial Technology, ²Hanyang University
- SP087 Effect of properties and microstructure of Ta-Cu liquid phase sintered composites with additives**
Kyoung-Tae Park¹, Kyoung-Deok Seo^{1,2}, Jae-Jin Sim¹, Soong-Keun Hyun²
¹Korea Institute of Industrial Technology, ²Inha University
- SP088 Electrorefining of titanium from Cu-Ti alloys in molten fluorides electrolyte**
Kyoung-Tae Park¹, Sang Hoon Choi^{1,2}, Jong soo Byeon^{1,2}, Jae Jin Sim¹, Seok-Jun Seo¹
¹Korea Institute of Industrial Technology, ²Inha University
- SP089 Fabrication of Tantalum Powder Using Hunter Process, by controlling the supply of reducing agent**
Jae-Jin Sim, Sang-Hoon Choi, Yong-Kwan Lee, Kyoung-Tae Park
Korea Institute of Industrial Technology

▶ Powder Materials Processing

- SP090 A Study on the Synthesis of Lithium Carbonate (Li₂CO₃) from Waste Acidic Sludge**
Jei-Pil Wang, Dong-Hyeon Choi, Sung-Ho Kim, Gyu-Cheol Kim
Pukyong National University
- SP091 Synthesis of Tungsten Powders with Nano-sized Oxide Dispersion by Ultrasonic Spray Pyrolysis and Polymer Solution Method**
Jeong Hyun Kim¹, Gyuwhi Lee¹, Ju-Yeon Han¹, Hyunji Kang¹, Young-In Lee¹,
Young-Keun Jeong², Sung-Tag Oh¹
¹Seoul National University of Science and Technology, ²Pusan National University
- SP092 Effect of High Frequency Heat Treatment on the Microstructure and Macroscopic Properties of WC-50 + Stellite 1 Coating Layer Fabricated by HVOF Spray Process**
Dong-Yeol Wi¹, Gi-Su Ham¹, Sun-Hong Park², Kee-Ahn Lee¹
¹Inha University, ²Research Institute of Industrial Science & Technology

- SP093 Fabrication and Compressive Properties of Open-Cell Ni-Mo-Cr (Hastelloy) Foams Manufactured by Electrostatic Powder Spraying**
Tae-Hoon Kang¹, Kyu-Sik Kim¹, Min-Jeong Lee², Jung-Yeul Yun², Kee-Ahn Lee¹
¹Inha University, ²Korea Institute of Materials Science
- SP094 SiC/Si composite parts via binder jetting additive manufacturing and molten Si infiltration**
Ji-Won Oh¹, Wonsik Lee¹, Jin Man Jang¹, Kyungin Kim², Hanshin Choi¹
¹Korea Institute of Industrial Technology, ²SKC solmics
- SP095 Direct concrete building additive manufacturing for mortar-backbone structures**
Jinsoo Park, Jin Man Jang, Wonsik Lee, Hanshin Choi
Korea Institute of Industrial Technology
- SP096 Comparative study of miscible and immiscible binary component nanoparticles in reactive inductively coupled thermal plasma synthesis**
Jin Man Jang, Hanshin Choi, Wonsik Lee
Korea Institute of Industrial Technology
- SP097 Fabrication and pore properties of the SUS316L Membrane with the double layered pore structure by Wet Powder Spraying Process**
Min-Jeong Lee¹, Hyeon-Ju Kim¹, Man-Ho Park², Jung-Yeul Yun¹
¹Korea Institute of Materials Science, ²ASFLOW CO. Ltd
- SP098 Facile structural modification of TiO₂ photocatalyst using ammonium hexafluorotitanate by wet chemical process**
Duk-Hee Lee, Jae-Ryang Park, Chan-Gi Lee, Kyung-Soo Park
Institute for Advanced Engineering
- SP099 Alternative Fabrication Method of Metallic Particulate Fuel by Vibration Packing**
Ki-Hwan Kim, Seoung-Woo Kuk, Sang-Kyu Park, Jeong-Yong Park
Korea Atomic Energy Research Institute
- SP100 Fabrication of nanocrystalline TiC-reinforced CoCrFeMnNi high-entropy alloy composite through high-pressure torsion and subsequent annealing**
Peyman Asghari-Rad^{1,2}, Nhung Cam-Thi Nguyen^{1,2}, Praveen Sathiyamoorthi^{1,2}, Taek Soo Kim³, Hyoung Seop Kim^{1,2,4}
^{1,2,4}Pohang University of Science and Technology, ³Korea Institute of Industrial Technology
- SP101 Effect of the Fabrication Methods of Fe-TiB₂ Nanocomposite Powders on the Spark-Plasma Sintering Behavior**
Sun-Woo Bae, Ji-Soon Kim
University of Ulsan

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Deokhyun Han¹, Geon-Hong Kim¹, Jaesung Kim², Byungmin Ahn³
^{1,2}Institute of Advanced Engineering, ³Ajou University
- SP103** **A Study on CNTs Dispersion Behavior in Aluminum Matrix by Various Ball Milling**
Geon-Hong Kim¹, Deokhyun Han¹, Jaesung Kim²
^{1,2}Institute of Advanced Engineering
- SP104** **A study of NiCo-ODS particles Synthesized by Organic-Inorganic (PVA) Solution Route at Low Temperature**
Choong-Hwan Jung, Young-Min Han
Korea Atomic Energy Research Institute
- SP105** **Ejection and De-lubrication Behavior of Admixed Lubricants in Fe P/M alloy for Warm Die or Warm Compaction Process**
Min Chul Oh, Byungmin Ahn
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- SP106** **Fabrication and Consolidation Behaviors of Rapidly Solidified Al-Si Alloy Powders for Additive manufacturing technologies**
Hong Jun Chae, Gwang Mook Choi, Young Kyun Kim, Chan Gi Lee
Institute for advanced Engineering
- SP107** **Preparation micro-wire feed stock of metallic glasses for the additive manufacturing process**
Song-Yi Kim, A-Young Lee, Hanuel Jang, Min-Ha Lee
Korea Institute of Industrial Technology
- SP108** **Synthesis of Ta-Hf Carbide powder by RF Plasma Method Using CH₄ gas as a Carbon Source**
Seong Min Hong, Hee Il You, Jung Chul Choi
Chonbuk National University
- SP109** **The effect of Mg concentration on the characteristics of Ta nanopowders**
H. S. Ryu¹, H. H. Nersisyan², J. H. Lee^{1,2,3}, G. T. Park⁴, B. U. Gu⁵, J. H. Yoon⁶, J. S. Yoon⁷
^{1,2,3}Chungnam National University, ⁴Korea Institute of Industrial Technology, ⁵Eco recycling, ⁶Institute for Advanced Engineering, ⁷Korea Basic Science Institute
- SP110** **Micro-tensile test of self-ion irradiated ODS steel**
Suk Hoon Kang¹, Seong-Dae Kim², Hee-Suk Chung³, Sanghoon Noh¹, Tae Kyu Kim¹
¹Korea Atomic Energy Research Institute, ²Korea Institute of Materials Science, ³Korea Basic Science Institute

- SP111 Development of Ultrafine STS316L Powders by High Pressure Water Atomization Technology for Additive Manufacturing**
Hee-Soo Kang, Eon-Sik Lee
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- SP112 Effect of carbon addition on austenite stability and mechanical properties of sintered FeMnNi alloys**
Seunggyu Choi, Junhyub Jeon, Namhyuk Seo, In-Jin Shon, Seok-Jae Lee
Chonbuk National University
- SP113 Parametric study on the VIGA-CC based synthesis of Titanium powder for additive manufacturing**
Dae-Kyeom Kim^{1,2}, Young Il Kim^{1,3}, Young Do Kim², Dongju Lee³, Bin Lee¹, Taek-Soo Kim¹
¹Korea Institute of Industrial Technology, ²Hanyang University, ³Chungbuk National University
- SP114 Interaction control between ceramic casting parts and melt during casting Rare-Earth containing U-Zr based alloys**
SeoungWoo Kuk, Kyungchai Jeong, Seokjin Oh, Kihwan Kim, Seung-Uk Mun, Seong-Jun Ha, Jeong-Yong Park
Korea Atomic Energy Research Institute
- SP115 Microstructure and mechanical properties of Ti-6Al-4V after selective laser melting and heat treatment**
Kang Pyo Lee, Kyung Hwan Jung, Kang Min Kim
Korea Institute of Industrial Technology
- SP116 Data Analytics Approach for Predicting Melt Pools Geometries in Metal Additive Manufacturing**
Seulbi Lee¹, Jaewoong Kim¹, Jae-Keun Hong², Dongwon Shin³, Yoon Suk Choi¹
¹Pusan National University, ²Korea Institute of Materials Science, ³Oak Ridge National Laboratory
- SP117 Melt Pool Modeling of Powder Bed Fusion using Finite Element Analysis**
Jaewoong Kim¹, Seulbi Lee¹, Jae-Keun Hong², Yoon Suk Choi¹
¹Pusan National University, ²Korea Institute of Materials Science
- SP118 The study of heat dissipation characteristic for nano carbon using friction stirred process**
Sangwoo Kim¹, Taehyeong Kim², DongEung Kim³, Changhyun Jin⁴
^{1,2,3}Korea Institute of Industrial Technology, ⁴Yonsei University
- SP119 Enhanced Electric properties of anode substrate using Ag/nano-carbon by friction stirred process**
Sangwoo Kim¹, Taehyeong Kim², DongEung Kim³, Changhyun Jin⁴
^{1,2,3}Korea Institute of Industrial Technology, ⁴Yonsei University

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Seung-Min Yang
Korea Institute of Industrial Technology
- SP121** Study on the Agglomeration of Microplastic in Water According to Reaction Time and Frequency of Sound Waves
HanSaem Lee^{1,2}, SungSil Nam^{1,2}, NuSiA Eom¹, Muhammad Aneeq Haq¹, HaiJoong Lee¹, HyoSoo Lee¹, HaeJin Hwang², Bum Sung Kim¹
¹Korea Institute of Industrial Technology, ²Inha University
- SP122** Study on the increase of forming density of soft magnetic parts using amorphous powder
Young Kyun Kim, Gwang Mook Choi
Institute for Advanced Engineering
- SP123** Effect of bimodal powder mixture on the densification and microstructure of powder metallurgy Ti-6Al-4V alloys
Youngmoo Kim¹, Sung Ho Lee¹, Young-Sam Kwon²
¹Agency for Defense Development, ²Cetatech Inc
- SP124** Porous commercially pure titanium part fabricated by selective laser melting based on process condition with low energy density
Won Rae Kim, Gun-Hee Kim, Hyung Giun Kim
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- SP125** Continuous synthesis of nickel powder by hydrazine reduction
Seung-Min Yang
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- SP126** Strain hardening response of Al-Mg alloys containing high content of Mg by multiple forging
Young-Chul Shin¹, Seong-Ho Ha², Ho-Joon Choi¹, Young-Ok Yoon², Shae K. Kim²
^{1,2}Korea Institute of Industrial Technology
- SP127** Hot isostatically pressed Nd₂Ti₂O₇ pyrochlore glass-ceramics as potential waste forms for technetium-99 immobilization
Tae-Hyuk Lee¹, Laura J. Gardner², Martin C. Stennett², Neil C. Hyatt²
¹Korea Institute of Geoscience and Mineral Resources, ²The University of Sheffield
- SP128** Phase Change Behavior of SiO₂ Phase in Sintered MoSiB Alloy during Al Pack Cementation
Jung Hyo Park, Seong Lee, Donghoon Kim, Youngmoo Kim
Agency for Defense Development

- SP129 Optimization of DED process parameters for reduction of porosity on HTCS-150 deposition**
Jongyoun Son¹, Gwangyong Shin², Kiyong Lee², Hiseak Yoon¹, Dosik Shim³
¹Chonnam National University, ²Korea Institute of Industrial Technology,
³Korea Maritime and Ocean University
- SP130 Laser-Engineered Oxygen Vacancies for Improving NO₂ Sensing Performance of SnO₂ Nanowires**
Young Kyu Jeong
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Sung Hoon Park, Seo Young Kim
Tesbi Inc
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Sung Yoon Kim, Woo Lim Choi, Myung In Kim, Jong-Hyun Lee
Seoul National University of Science and Technology
- SP133 Corrosion Properties of Ti Bulk Metallic Glasses Alloys without Be for Additive Manufacturing**
YeonJoo Lee^{1,2}, GooWon Noh¹, HyunJoo Choi², HwiJun Kim¹
¹Korea Institute of Industrial Technology, ²Kookmin University
- SP134 The variation of high temperature strengthening mechanisms in Ni-based ODS superalloy with varying Al contents**
GooWon Noh^{1,2}, YoungDo Kim², Gilbong Jung³, HwiJun Kim¹
¹Korea Institute of Industrial Technology, ²Hanyang University,
³Defense Agency for Technology and Quality
- SP135 Effect of the Cu layers on the conductivity and mechanical properties of carbon fiber reinforced Cu composites fabricated by electroplating and powder consolidation process**
Hyeongjin Lee^{1,2}, Dohun Kwon¹, Goowon Noh¹, Keeahn Lee², Hwijun Kim¹
¹Korea Institute of Industrial Technology, ²Inha University
- SP136 Effect of Glass-coated Al paste on Back Surface Field Formation in Si Solar Cells**
Hyeondeok Jeong, Sung-Soo Ryu
Korea Institute of Ceramic Engineering and Technology
- SP137 Experimental analysis of the ultra-precision measurement technology for characterization of nano-scale single crystal diamond cutting tool wear**
J. S. Han¹, J. Y. Jeong^{1,2}, D. S. Choi¹, T. J. Je^{1,2}
¹Korea Institute of Machinery and Materials (KIMM), ²University of Science and Technology (UST)