

## Poster Sessions

### PI-1 : Poster Session I(Advanced LIB)

Room **중회의실 로비, 11 월 02 일 16:00 - 17:10**

PI-1-1

Elastic Spongy Graphene-Functionalized Silicon Anode for Li Ion Battery with Excellent Cycle Stability

Chunfei Zhang, 강동현, \*유종성<sup>1</sup>

Chunfei. Zhang, Tong Hyeon. Kang, \*Jong-Sung. Yu<sup>1</sup>

*DGIST. <sup>1</sup>DaeguGyeongbukInstituteofScience&Technology(DGIST).*

PI-1-2

Novel electrically conductive poly(aniline-co-anthranilic acid) copolymer binder for high performance silicon anode

이국주, 임상현, \*김태현

KUKJOO. LEE, Sanghyun. Lim, \*Tae-Hyun. Kim

*인천대학교.*

PI-1-3

Synthesis of nano-size silicon particles (NSSPs) from natural mineral (talc) using magnesio-thermic reduction process and possibility of application for anode material in Lithium-ion batteries

박양규, \*이재원

Yang Kyu. Park, \*Jae won. Lee

*단국대학교.*

PI-1-4

The Electrochemical Properties Analysis of the Laser Structured LiFePO<sub>4</sub> Electrode for Lithium ion Batteries

현성식, 박준수, \*정성호, \*김형진

Seongsik. Hyeon, Junsu. Park, \*Sungho. Jeong, \*Hyeong-Jin. Kim

*광주과학기술원.*

PI-1-5

소듐 이차 전지용 P2 타입-Na<sub>0.67</sub>Fe<sub>0.5</sub>Mn<sub>0.5</sub>O<sub>2</sub> 양극재의 Al 치환에 따른 율특성 및 수명특성 향상

박준기, 박근경, \*이재원

Joon-Ki. Park, Geun Gyung. Park, \*Jae won. Lee

*단국대학교.*

PI-1-6

Investigation of interaction between polysulfide and BaTiO<sub>3</sub> particles in Lithium-sulfur battery system

이하얀

Hayan. Lee

*단국대학교.*

PI-1-7

LiFePO<sub>4</sub>/Graphite 리튬이온전지의 전해질 고갈 함수를 포함한 반경험적 수명 예측 모델

박주남, WILLIAMSAPPIAHAGYEI, 변승우, 진다희<sup>1</sup>, 유명현<sup>1</sup>, \*이용민

Joonam. Park, APPIAH. WILLIAMS AGYEI, Seoungwoo. Byun, Dahee. Jin<sup>1</sup>, Myung-Hyun. Ryou<sup>1</sup>, \*Yong Min. LEE

*대구경북과학기술원. <sup>1</sup>한밭대학교.*

PI-1-8

세라믹 함량의 따른 고분자 전해질과 리튬 금속 전극의 계면안정성

박지연, 김석우<sup>1</sup>, 윤별희, 진다희<sup>1</sup>, 이용민<sup>2</sup>, \*유명현

Ji Yeon. Park, seokwoo. kim<sup>1</sup>, Yoon. byeolhee, Dahee. Jin<sup>1</sup>, Yong Min. LEE<sup>2</sup>, \*Myung-Hyun. Ryou

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PI-1-9

SnTe-TiC-C composite anodes for high-performance lithium-ion storage

배재한, 김두수, 손승연, \*김일태

JaeHan. Bae, Doo Soo. Kim, Seung yeon. Son, \*IL TAE. KIM

*가천대학교.*

PI-1-10

A Promising Antimony based metal alloy Anodes for Lithium-ion Batteries

김두수, 김우섭, 이동준, \*김일태

Doo Soo. Kim, kim. woo seob, Dong-jun. Lee, \*IL TAE. KIM

*가천대학교.*

PI-1-11

Ni-Sb-O composites as a High Performance anode for Sodium ion batteries

Nguyen Tuan Loi, VO NGOC THUAN, NGUYEN HOANG KHA, \*김일태

Loi. Nguyen, NGOC THUAN. VO, HOANG KHA. NGUYEN, \*IL TAE. KIM

*가천대학교.*

PI-1-12

분리막/메탈 일체화를 통한 전기화학적 향상 연구

최준영, 전현규<sup>1</sup>, 이승민, 이용민<sup>2</sup>, 유명현<sup>1</sup>

JunYoung. Choi, Hyunkyu. Jeon<sup>1</sup>, Seungmin. Lee, Yong Min. LEE<sup>2</sup>, Myung-Hyun. Ryou<sup>1</sup>

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PI-1-13

다습한 환경에서의 리튬이차전지 자가방전 거동

변승우, 박주남, WILLIAMSAPPIAHAGYEI, \*유명현<sup>1</sup>, \*이용민

Seoungwoo. Byun, Joonam. Park, APPIAH. WILLIAMS AGYEI, \*Myung-Hyun. Ryou<sup>1</sup>, \*Yong Min. LEE

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PI-1-14

리튬이온배터리의 고전압 구동을 위한 새로운 양극 첨가제 적용 영향 평가

박은지, 이상현, \*조국영

Eun Ji. Park, Sang Hyun. Lee, \*KUK YOUNG. CHO

*한양대학교.*

PI-1-15

전극의 바인더 조성에 따른 결착력 변화 측정 및 출력 특성과의 상관관계 연구

노영준, 변승우, 박주남, \*유명현<sup>1</sup>, \*이용민

Youngjoon. Roh, Seoungwoo. Byun, Joonam. Park, \*Myung-Hyun. Ryou<sup>1</sup>, \*Yong Min. LEE  
대구경북과학기술원. <sup>1</sup> 한밭대학교.

#### PI-1-16

리튬 금속 파우더 전극의 압연율에 따른 전기화학적 성능 향상에 관한 연구

진다희, 오정훈, 오성록, 이용민<sup>1</sup>, \*유명현

Dahee. Jin, jeonghun. Oh, seong rock. Oh, Yong Min. LEE<sup>1</sup>, \*Myung-Hyun. Ryou  
국립한밭대학교 화학생명공학과. <sup>1</sup> 대구경북과학기술원.

#### PI-1-17

Co-polyimide 바인더를 이용한 Si/Graphite 음극의 전기화학적 성능 개선

오정훈, 진다희, 송다노, 조혜린, 오성록, 이용민<sup>1</sup>, \*유명현

jeonghun. Oh, Dahee. Jin, dano. Song, hearin. Jo, seongrock. Oh, Yong Min. LEE<sup>1</sup>, \*Myung-Hyun. Ryou  
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#### PI-1-18

Rapid Synthesis of Nanocrystalline Carbon-Mixed Metal Oxide Nanocomposites with Enhanced Electrode Performance

이장미, 구태하, 권남희, 오승미, 황성주\*

Jang Mee Lee, Tae Ha Gu, Nam Hee Kwon, Seung Mi Oh, Seong-Ju Hwang\*  
이화여자대학.

#### PI-1-19

Poly(ethylene glycol)-mediated crosslinked pyridinium triblock copolymers prepared by RAFT polymerization as novel polymer electrolytes

신인섭, \*김태현

Inseop. Shin, \*Tae-Hyun. Kim  
인천대학교.

#### PI-1-20

패턴화된 리튬 금속 전극에 고성능 이중 염 전해질 도입을 통한 전지 성능 개선 연구

윤별희, 김석우, 진다희, 박지연, 오성록, 이용민<sup>1</sup>, \*유명현

byeolhee. Yoon, seokwoo. kim, Dahee. Jin, jiyeon. park, seong rock. Oh, Yong Min. LEE<sup>1</sup>, \*Myung-Hyun. Ryou  
국립한밭대학교 화학생명공학과. <sup>1</sup> 대구경북과학기술원.

#### PI-1-21

SAICAS 를 이용한 세라믹 코팅 분리막의 코팅층 결착 특성에 대한 연구

전현규, 최준영, 이승민, 이용민<sup>1</sup>, \*유명현

Hyunkyu. Jeon, JunYoung. Choi, Seungmin. Lee, Yong Min. LEE<sup>1</sup>, \*Myung-Hyun. Ryou  
한밭대학교 화학생명공학과. <sup>1</sup> 대구경북과학기술원.

#### PI-1-22

Analytical modelling of the effect of adhesive strength on the electrochemical performance of silicon based lithium ion batteries

WILLIAMSAPPIAHAGYEI, 박주남, 변승우, \*유명현<sup>1</sup>, \*이용민

APPIAH. WILLIAMS AGYEI, Joonam. Park, Seoungwoo. Byun, \*Myung-Hyun. Ryou<sup>1</sup>, \*Yong Min. LEE

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PI-1-23

Germanium Based Anodes with High-Power and High-Energy Density for Lithium-Ion Storage Applications

송규진

Gyujin. Song

*울산과학기술원.*

PI-1-24

Investigation on Structural Changes and the Reaction Kinetics of Ni-rich Cathode Materials during the Initial Charge/Discharge 이차전지 Ni 계 양극 소재의 초기 충/방전시 구조 변화 및 속도론적 연구

이혜수, 조은미, 정경윤, 변동진<sup>1</sup>, 김승민, \*장원영

Hyesu. Lee, Eunmi. Jo, Kyungyoon. Chung, Dongjin. Byun<sup>1</sup>, Seungmin. Kim, \*Wonyoung. Chang

*한국과학기술연구원. <sup>1</sup> 고려대학교.*

PI-1-25

Temperature Dependent Crystal Structure of MoO<sub>3</sub> for LIB use

정은지<sup>1</sup>, 손용근\*

Eunji. Jung<sup>1</sup>, Yongkeun. Son\*

*성균관대학교.*

PI-1-26

Ni-rich 양극 소재의 수명 특성 향상을 위한 SOx 기반 유기물 습식 코팅 기술 개발 Development of SOx-based organic wet coating technology to improve cycleability of Ni-rich cathode materials

채범진

Bum-Jin. Chae

*인천대학교.*

PI-1-27

실록사이드 작용기를 포함하는 무기물 첨가제의 유기 전해액에 대한 안정성 연구 A study on chemical stability between lithium trimethylsiloxide and carbonate-based solvent for lithium-ion batteries

장설희

SEOLHEUI. JANG

*인천대학교.*

PI-1-28

Noble Strategy to improve the Li-storage performance of micro silicon anodes for Lithium ion battery

최민재

Min Jae. Choi

*한양대학교.*

PI-1-29

High-Energy Density Ni-Rich(above 95%) Core-Shell Cathode for Lithium-Ion Batteries

김운혁, \*선양국

Un-Hyuck. Kim, \*Yang-Kook. Sun

*한양대학교.*

PI-1-30

Extending the cycle Life using Al-substitution Ni-rich Cathode  $\text{Li}[\text{Ni}_{0.76}\text{Co}_{0.09}\text{Mn}_{0.15}]\text{O}_2$  with Full concentration gradient for Lithium Ion Batteries

김운혁, \*선양국

Un-Hyuck. Kim, \*Yang-Kook. Sun

*한양대학교.*

PI-1-31

Real time observation of dendrite growth of lithium and sodium metal anodes through optical microscope

김동휘, 유승일<sup>1</sup>, 박재환<sup>1</sup>, 이호춘

Donghui. Kim, Seung-Il. Yoo<sup>1</sup>, Jae-Hwan. Park<sup>1</sup>, Hochun. Lee

*대구경북과학기술원. <sup>1</sup>파낙스이텍.*

PI-1-32

Solution structure and ion-transport properties of TFSI- and FSI-based ionic liquids doped with lithium salts

황순욱, \*이호춘

Sunwook. Hwang, \*Hochun. Lee

*대구경북과학기술원.*

PI-1-33

NiO/Carbon sheet Composite with Enhanced Electrochemical Performances as an Anode Material for Lithium-Ion Batteries

제우진, 김선태, \*김종식

Woojin. Jae, Seontae. Kim, \*Jongsik. Kim

*동아대학교.*

PI-1-34

Improved Electrochemical Performances of the  $\text{Li}_3\text{VO}_4$  with Surface Nitrogen-Doped Carbon Coating Thin Layers for Lithium-Ion Batteries

박한솔, 송정욱, \*김종식

Hansol. Park, Jungwook. Song, \*Jongsik. Kim

*동아대학교.*

PI-1-35

The amorphous red phosphorus/carbon composite powders were obtained via a facile and simple ball milling process as high performance for next generation rechargeable batteries

윤다예

Yoon. Daye

*단국대학교.*

PI-1-36

리튬-황 전지 양극소재를 위한 고분자-유도 중공 탄소 구조의 합성법 연구

윤나은, \*이정규

Na Eun. Yoon, \*Jung Kyoo. Lee

*동아대학교.*

PI-1-37

금속 열 환원을 이용한 이차전지 음극소재용 다공성-실리콘 제조 및 전기화학적 특성 연구

박혜정, \*이정규<sup>1</sup>

Hyejeong. Park, \*Jung Kyoo. Lee<sup>1</sup>

*동아대학교화학공학과. <sup>1</sup> 동아대학교.*

PI-1-38

Development of boron doped carbon using CO<sub>2</sub> reduction with NaBH<sub>4</sub> for vanadium redox flow battery

한만호, \*김한성

Manho. Han, \*Hansung. Kim

*연세대학교.*

PI-1-39

전고체전지용 Ni-rich 계 양극소재의 Li<sub>2</sub>MoO<sub>4</sub> 코팅을 통한 표면안정화 향상을 위한 연구

곽환욱, \*박용준

HWANWOOK. KWAK, \*YONG JOON. PARK

*경기대학교.*

PI-1-40

Studies on the electrolyte enabling highly efficient performance of Li metal batteries

박기성, 장민철<sup>1</sup>, 박창훈<sup>1</sup>, \*이호춘

Kisung. Park, Minchul. Jang<sup>1</sup>, Changhun. Park<sup>1</sup>, \*Hochun. Lee

*대구경북과학기술원. <sup>1</sup>(주)LG 화학.*

PI-1-41

패턴화된 리튬 금속 전극에 무기물 합성 보호막 층의 도입을 통한 수명 특성 개선 연구

김석우, 박진규, \*이용민<sup>1</sup>, \*유명현

seokwoo. kim, Jinkyu. Park, \*Yong Min. LEE<sup>1</sup>, \*Myung-Hyun. Ryou

*한밭대학교. <sup>1</sup> 대구경북과학기술원.*

PI-1-42

리튬이차전지용 전해질의 실리콘 화합물 첨가에 따른 전기화학적 특성 평가

김병량, \*홍영규

Byung Ryang. Kim, \*Young Kyu. Hong

*전자부품연구원.*

PI-1-43

Rebuttal to the claim of the superior rate performance in a superconcentrated LiFSI/AN electrolyte

박성효, \*이호춘

Seong-Hyo. Park, \*Hochun. Lee

*대구경북과학기술원.*

PI-1-44

High-Voltage Functional Electrolyte Component for Lithium-rich Layered Oxide Battery Cathode

팜광훈, 이희열, 권영길<sup>1</sup>, 황의형<sup>1</sup>, \*송승완

Hieu Quang. Pham, Hee-Yeol. Lee, Young-Gil. Kwon<sup>1</sup>, Eui-Hyung. Hwang<sup>1</sup>, \*Seung-Wan. Song

*충남대학교. <sup>1</sup> 리켄주식회사.*

PI-1-45

One-pot surface engineering of battery electrode materials with metallic SWCNT-enriched, ivy-like conductive nanonets

조석규, 김승혁<sup>1</sup>, 유대은, 이권형<sup>1</sup>, 홍상호<sup>1</sup>

Seok-Kyu. Cho, Seung Hyeok. Kim<sup>1</sup>, Daeun. Yu, kwonhyung. Lee<sup>1</sup>, Sang-Ho. Hong<sup>1</sup>

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PI-1-46

전도성 물질 도입을 통한 리튬 금속 전지의 전기화학적 성능 향상에 관한 연구

송다노, 조혜린, 오정훈, 이용민<sup>1</sup>, \*유명현

Danoh. Song, hearin. Jo, jeonghun. Oh, Yong Min. LEE<sup>1</sup>, \*Myung-Hyun. Ryou

*한밭대학교 화학생명공학과. <sup>1</sup> 대구경북과학기술원.*

PI-1-47

In-depth study of the confinement effect of highly dispersive carbon in a transition metal binary compound/carbon nanocomposite: conversion anode materials in lithium ion batteries

임원광, 이유진<sup>1</sup>, 주미은, 신승재<sup>1</sup>, \*이진우

Won-Gwang. Lim, YUJIN. LEE<sup>1</sup>, Mieun. Ju, Seungjae. Shin<sup>1</sup>, \*Jinwoo. Lee

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PI-1-48

Si nanosheet as a negative electrode for rechargeable Li-ion batteries

하정훈, 박정민<sup>1</sup>, 박상원<sup>1</sup>, \*김종학<sup>1</sup>, \*조병원<sup>2</sup>

Jung Hoon. Ha, Jeong Min. Park<sup>1</sup>, Sangwon. Park<sup>1</sup>, \*Jong Hak. Kim<sup>1</sup>, \*Byung Won. Cho<sup>2</sup>

*연세대학교. 한국과학기술연구원. <sup>1</sup> 연세대학교. <sup>2</sup>*

PI-1-49

고전류 구리-주석 합금 도금을 이용한 리튬이온 배터리의 음극재 제조법 연구

정민경, 김재승, \*이기백, \*최진섭

Minkyong. Jung, Jaeseung. Kim, \*Gibaek. Lee, \*Jinsub. Choi

*인하대학교.*

PI-1-50

Properties of Spinel Cathodes of 5V for Secondary Lithium Batteries

문락훈, 노영주, 권능, \*정연욱<sup>1</sup>

rak hun. mun, young ju. noh, Neung. Kwon, \*yeonuk. Jeong<sup>1</sup>

*경북대학교신소재공학부. <sup>1</sup> 경북대학교.*

PI-1-51

SiO<sub>2</sub>/TiO<sub>2</sub> composite film for lithium ion battery anode

김수덕, 이다영, \*이기백, 최진섭

Sudeok. Kim, Dayoung. Lee, \*Gibaek. Lee, Jinsub. Choi

*인하대학교.*

PI-1-52

저온(-20°C)에서 활성탄 함량에 따른 고출력 펄스 리튬이차전지 특성

우민홍, \*장덕례

Woo. Min Hong, \*CHANG. DUCK RYE

*한국생산기술연구원.*

PI-1-53

PEO/Li<sub>7</sub>La<sub>3</sub>Zr<sub>2</sub>O<sub>12</sub> 고체전해질에서 전고체 리튬이차전지의 특성

김주민, \*장덕례, 김종호<sup>1</sup>

JuMin. Kim, \*CHANG. DUCK RYE, Jongho. Kim<sup>1</sup>

*한국생산기술연구원. <sup>1</sup> 전남대학교.*

PI-1-54

PVdF-HFP/ Al<sub>2</sub>O<sub>3</sub> 유무기 전해질에서 EC/PC 함량에 따른 리튬이차전지의 특성

김용, \*장덕례

Yong. Kim, \*CHANG. DUCK RYE

*한국생산기술연구원.*

PI-1-55

Improved Cycling and Initial Efficiency of WO<sub>x</sub>/SiO<sub>x</sub> Embedded in Mesoporous Carbon Matrix on Lithium-Ion Battery Anode

김재광, 김나영, 이일복, 김효성, 황기범, 배중호, \*윤성훈

Jaekwang. Kim, Nayeong. Kim, Ilbok. Lee, Hyosung. Kim, Keebum. Hwang, Joongho. Bae, \*Songhun. Yoon

*중앙대학교.*

PI-1-56

PEO/Li<sub>7</sub>La<sub>3</sub>Zr<sub>2</sub>O<sub>12</sub>(LLZO) 유무기 하이브리드 고체전해질에서 PEGDME 함량에 따른 전고체 리튬이차전지의 특성

차지혜, \*장덕례

CHA. JI HYE, \*CHANG. DUCK RYE

*한국생산기술연구원.*

PI-1-57

Improvement in electrochemical properties of polyfurfuryl alcohol (PFA) resin-derived carbon coated silicon/iron silicide nanocomposite anode for lithium ion batteries by chemical vapor deposition (CVD) of acetylene

장주영, 강인영, 이경우<sup>1</sup>, \*조영환<sup>2</sup>

Juyoung. Jang, Inyeong. Kang, Kyung-Woo. Yi<sup>1</sup>, \*Young Whan. Cho<sup>2</sup>

*서울대학교재료공학부/한국과학기술연구원. <sup>1</sup> 서울대학교 재료공학부. <sup>2</sup> 한국과학기술연구원.*

PI-1-58

Introducing controllable void to Si/silicide/carbon composite anodes materials for Li-ion batteries



강인영, 장주영, 이경우<sup>1</sup>, 조영환<sup>2</sup>

Inyeong. Kang, Juyoung. Jang, Kyung-Woo. Yi<sup>1</sup>, Young Whan. Cho<sup>2</sup>

서울대학교/한국과학기술연구원. <sup>1</sup> 서울대학교. <sup>2</sup> 한국과학기술연구원.

PI-1-59

높은 에너지 밀도와 빠른 충방전을 위한 Carbon Nanotube 기반의 Lithium-ion 배터리 전극 연구

송현준, 황윤재, 오현웅, 김민선, \*정영진

Hyeonjun. Song, Yunjea. Hwang, Hyunwoong. Oh, Minsun. Kim, \*Youngjin. Jeong

숭실대학교.

PI-1-60

리튬 이차전지의 환경 친화성 및 열적 안전성을 위한 PE 분리막의 표면 처리 연구 및 수계 바인더/세라믹 코팅 PE 분리막 연구

권용갑, \*김기재

YongKab. Kwon, \*Ki Jae. Kim

서울과학기술대학교.

PI-1-61

Synergistic Effect of Partially Fluorinated Ether and Fluoroethylene Carbonate for High-Voltage Lithium-Ion Batteries with Rapid Chargeability and Dischargeability

김고은, 김준기, 신교민<sup>1</sup>, 우정재<sup>1</sup>, 김사흠<sup>1</sup>, 홍성유, \*최남순

Koeun. Kim, Choon-Ki. Kim, Kyomin. Shin<sup>1</sup>, Jung-Je. Woo<sup>1</sup>, Saheum. Kim<sup>1</sup>, Sung You. Hong, \*Nam-Soon. Choi

울산과학기술원. <sup>1</sup> 현대자동차.

PI-1-62

The Performance of Advanced Lead-Acid Battery with Carbon Negative Electrode

\*이승복, 문건오, 신동석, 이아리

\*Seungbok. Lee, Geono. Moon, Dongseok. Shin, Ari. Lee

(주)에너지플래닛.

PI-1-63

Performance of Pb/C battery with graphite sheets for negative electrodes

이승복, 문건오, 신동석, 이아리

Seungbok. Lee, Geono. Moon, Dongseok. Shin, Ari. Lee

(주)에너지플래닛.

PI-1-64

전기자동차용 리튬이온전지의 양극 및 음극의 열화 현상 분석

조용남, 강현철, \*유지상

Yong Nam. Jo, HyunChul. Kang, \*Jisang. Yu

전자부품연구원.

PI-1-65

Lithium-ion cells employing ester-based liquid electrolyte for improving the cycling performance at low temperature.

박승학, 김상형, 김수진<sup>1</sup>, 김동원

Seung Hark. Park, Sang-Hyung. Kim, Soojin. Kim<sup>1</sup>, DONG-WON. Kim

한양대학교. <sup>1</sup> 삼성 SDI.

PI-1-66

리튬이온 이차전지에서 Ni-rich NCM 양극 소재의 열화 분석 Failure mechanism analysis of  $\text{LiNi}_{0.88}\text{Co}_{0.09}\text{Mn}_{0.03}\text{O}_2$  cathodes in Li-ion full cells

\*우상길, 이동건, 황은경, 유지상

\*Sang-Gil. Woo, Dong-Gun. Lee, Eun-Kyung. Hwang, Ji-Sang. Yu

전자부품연구원.

PI-1-67

Mechanism study of  $\text{MoS}_2$  electrode using the Synchrotron-Based X-ray Analysis

최우성, 최윤석<sup>1</sup>, 이원태, 김지만<sup>1</sup>, \*윤원섭

Woo Sung. Choi, Yun Seok. Choi<sup>1</sup>, WONTAE. LEE, Ji Man. Kim<sup>1</sup>, \*Won-Sub. Yoon

성균관대학교. <sup>1</sup> 성균관대학교화학과.

PI-1-68

Morphology Control of Graphene and Variety Composite for Li – ion Battery Electrodes

정희성

HEESUNG. JEONG

한국원자력연구원.

PI-1-69

Effect of particle fracture on the cycling performance of cathode electrode

이제남, 홍기선, 조용남, 임상후, 김경수, 정구진, \*유지상

Je-Nam. Lee, Ki Sun. Hong, Yong Nam. Jo, Sang Hoo. Lim, KyungSu. Kim, Goojin. Geong, \*Ji-Sang. Yu

전자부품연구원.

PI-1-70

Multi-Textured Structural Cathode Materials for Enhancing Fast Charging Performance in Li-ion Batteries.

민병철, 박동준, \*김점수<sup>1</sup>

BYEONGCHEOL. MIN, Dong Jun. Park, \*Jeom-Soo. Kim<sup>1</sup>

동아대학교화학공학과. <sup>1</sup> 동아대학교.

PI-1-71

The Study on Boron-doped NCM Cathode Materials Synthesized with Various Boron Sources

박동준, \*김점수

Dong Jun. Park, \*Jeom-Soo. Kim

동아대학교화학공학과.

PI-1-72

Synthesis and Characterization of dual-doped  $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$  Garnet-Type Solid Electrolyte via Sol-Gel Method

김진원, James Digol<sup>1</sup>, 양승훈, \*이재영

JinWon. Kim, James. Digol<sup>1</sup>, Seung Hoon. Yang, \*Jaeyoung. Lee

광주과학기술원. <sup>1</sup> University of the Philippines Diliman.

PI-1-73

Control the Solid Electrolyte Interphase of Silicon-Graphite Composite Anode for High-Energy Lithium-ion Batteries

이민하, 최민지, 김재람, 누엔티흐엉지앙, 전도만<sup>1</sup>, 양아름<sup>1</sup>, \*송승완

Minha. Yee, Minji. Choi, Jaeram. Kim, Thi Huong Giang. Nguyen, Do-Man. Jeon<sup>1</sup>, A-Reum. Yang<sup>1</sup>, \*Seung-Wan. Song  
충남대학교. <sup>1</sup> 주식회사 EG.

## PI-2 : Poster Session I(POST-LIB)

Room **중회의실 로비, 11 월 02 일 16:00 - 17:10**

PI-2-1

High-performance Li-SO<sub>2</sub> Batteries Exploiting Conventional Carbonate-based Electrolytes

박혁준, 임희대, 임형규<sup>1</sup>, 김형준<sup>1</sup>, \*강기석

Hyeokjun. Park, Hee-Dae. Lim, Hyung-Kyu. Lim<sup>1</sup>, Hyungjun. Kim<sup>1</sup>, \*Kisuk. Kang  
서울대학교. <sup>1</sup> 한국과학기술원.

PI-2-2

에너지 저장 시스템 제어를 위한 부하 예측 기술 개발

\*윤주영

\*Juyoung. Youn

두산중공업

PI-2-3

A study on NaF-FeF<sub>2</sub> nanocomposite as a new type of sodium secondary battery cathode material

황인상, 정성균, 정은석<sup>1</sup>, 김현철<sup>2</sup>, 김형섭<sup>3</sup>, 윤원섭<sup>2</sup>, \*강기석

Insang. Hwang, Sung-Kyun. Jung, Eunsuk. Jeong<sup>1</sup>, HYUN CHUL. KIM<sup>2</sup>, Hyungsub. Kim<sup>3</sup>, Won-Sub. Yoon<sup>2</sup>, \*Kisuk. Kang

서울대학교. <sup>1</sup> 전북대학교. <sup>2</sup> 성균관대학교. <sup>3</sup> 한국원자력연구원.

PI-2-4

Ultrathin Nafion-filled porous membrane for zinc/bromine redox flow batteries

김리울, 김현규, 두기수, 최찬용, 김수현, 이주혁, 허지윤, 정호영<sup>1</sup>, \*김희탁

Riyul. Kim, HyunGyu. Kim, Gisu. Doo, Chanyong. Choi, Soohyun. Kim, Ju-Hyuk. Lee, Jiyun. Heo, Ho-Young. Jung<sup>1</sup>, \*Hee-Tak. Kim

한국과학기술원. <sup>1</sup> 전남대학교.

PI-2-5

Stability of P2-Na<sub>x</sub>Fe<sub>1/2</sub>Mn<sub>1/2</sub>O<sub>2</sub> as a Cathode Material for Sodium-Ion Batteries against Air and Moisture

서재성, 이재원

JAESUNG. SEO, Jaewon. Lee

단국대학교.

PI-2-6

A Polyaniline-Coated Cathode Material for Li-SeS<sub>2</sub> Battery with an Improved High-Rate Capability and Long Cycle Life

김원희, 이승민, 엄광섭, \*김형진

Wonhee. Kim, Seungmin. Lee, Gwangsup. Eom, \*Hyeong-Jin. Kim

*광주과학기술원.*

PI-2-7

Dual conductive effect of cobalt elemental doping and metal matrix in carbon layer for Si nanoparticle as Li-ion battery anode

이성윤, 윤수근, 김솔이

Lee. Sungyun, Sukeun. Yoon, sol lee. kim

*공주대학교.*

PI-2-8

The role of ionic liquids in the electrolyte properties of Grignard reagent for rechargeable magnesium batteries

이보은, 서효리, 나수빈, 김종학<sup>1</sup>, \*오시형

Boeun. Lee, Hyo Ree. Seo, Subin. Na, Jong Hak. Kim<sup>1</sup>, \*Si Hyoung. Oh

*한국과학기술연구원. <sup>1</sup> 연세대학교.*

### PI-3 : Poster Session I(Current and Future Trend of Electrochemical Capacitors)

**Room 중회의실 로비, 11 월 02 일 16:00 - 17:10**

PI-3-1

Fabrication of all solid-state flexible micro-supercapacitor via xurography method

김성욱, 강경남, 민진욱, \*장지현

Sung-Wook. Kim, Kyeong-Nam. Kang, Jin-Wook. Min, \*Ji-Hyun. Jang

*울산과학기술원.*

PI-3-2

Cathodically electrodeposited highly porous Co(OH)<sub>2</sub> sheets and its electrochemical performance

권종명, ANTHUVAN RAJESH, \*안광순

Jong Myeong. Kwon, Anthuvan. Rajesh, \*Kwang-Soon. Ahn

*영남대학교.*

PI-3-3

The effect of potentiostatic deposition time on the morphology and electrochemical performances of CoNi<sub>2</sub>S<sub>4</sub> nanostructure

ANTHUVAN RAJESH, 부흥빈궤이/VUHONGVINHQUY, 권종명, 채지영, \*안광순

Anthuvan. Rajesh, Vu. Quy, Jong Myeong. Kwon, Jiyoung. Chae, \*Kwang-Soon. Ahn

*영남대학교.*

PI-3-4

Synthesis of cobalt silicide nanowires and their micro-supercapacitor application

이지영, 이영아<sup>1</sup>, 유충열<sup>1</sup>, 박상현<sup>1</sup>, 유정준<sup>1</sup>, \*김봉수, \*윤하나<sup>1</sup>

Jiyoung. Lee, Yeong A. Lee<sup>1</sup>, Chung-Yul. Yoo<sup>1</sup>, Sang Hyun. Park<sup>1</sup>, Jung Joon. Yoo<sup>1</sup>, \*Bongsoo. Kim, \*Hana. Yoon<sup>1</sup>

*KAIST. <sup>1</sup> 한국에너지기술연구원.*

PI-3-5

Carbon coated three-dimensional copper structures for high performance asymmetric supercapacitor with high energy density

강경남

Kyeong Nam. Kang

*울산과학기술원.*

PI-3-6

The Study of Crystal Structure of Nb<sub>2</sub>O<sub>5</sub>@Carbon Core-Shell Nanoparticles and Their Effect of Li-ion Hybrid Supercapacitor Performance.

이지성, 이지아, 임은호<sup>1</sup>, \*이진우<sup>1</sup>

Jisung. Lee, Jia. Lee, Eunho. Lim<sup>1</sup>, \*Jinwoo. Lee. Lee<sup>1</sup>

*포항공과대학교화학공학과. <sup>1</sup> 포항공과대학교.*

PI-3-7

수퍼커패시터 (EDLC)용 젤 폴리머 전해질 설계 및 적용기술 개발에 관한 연구

박하빈, 용한솔, 정종원, 이경운, 이승환, 이상현<sup>1</sup>, \*정철수

Habin. Park, Hansol. Yong, Jongwon. Jung, Kyeongun. Lee, Seunghwan. Lee, Sanghyeon. Lee<sup>1</sup>, \*Cheolsoo. Jung

*서울시립대학교. <sup>1</sup> 스카이캡(주).*

PI-3-8

Surface modification of activated carbon for supercapacitor with conducting agent free type electrode

장수진, 천진녕, \*노광철

Su-jin. Jang, Jinyoung. Chun, \*Kwnag Chul. Roh

*한국세라믹기술원.*

PI-3-9

활성탄 전극 수퍼커패시터 용 젤 폴리머 전해질의 고율 용량 개선을 위한 염 함량 최적화에 관한 연구

용한솔, 박하빈, 정종원, \*정철수

Hansol. Yong, Habin. Park, Jongwon. Jung, \*Cheolsoo. Jung

*서울시립대학교.*

PI-3-10

Enhanced active sites of 3D nanocomposites of reduced graphene oxide/polyaniline by using Vulcan carbon spacer for high performance supercapacitors

강정민, 황민식<sup>1</sup>, \*박원철<sup>2</sup>

Jeongmin. Kang, minsik. Hwang<sup>1</sup>, \*Yuanzhe. Piao<sup>2</sup>

*서울대학교 융합과학기술대학원. <sup>1</sup> 서울대학교 융합과학기술대학원. <sup>2</sup> 서울대학교.*

PI-3-11

Synthesis and electrochemical properties of 3D nanostructured Ni-Co oxide/electrochemically exfoliated graphene nanocomposites for supercapacitor applications

김대겸, \*박원철<sup>1</sup>

Dae Kyom. Kim, \*Yuanzhe. Piao<sup>1</sup>

*서울대학교 융합과학기술대학원. <sup>1</sup> 서울대학교.*

PI-3-12

A simple fabrication of nanostructured NiCo<sub>2</sub>S<sub>4</sub> electrode for supercapacitors using alternate dip-coating method

강진현, 최근표, \*임상규

Jinhyeon. Kang, GuenPyo. Choe, \*Sanggyu. Yim

*국민대학교.*

PI-3-13

Bio-mass Derived Porous Carbon for Ultra-high Stable, High Energy Supercapacitors

THANGAVEL RANJITH, 김소영<sup>1</sup>, 공민경<sup>2</sup>, 박주연<sup>2</sup>, HARI VIGNESH<sup>1</sup>, \*이윤성<sup>1</sup>

THANGAVEL. RANJITH, Soyoung. Kim<sup>1</sup>, MinKyung. Gong<sup>2</sup>, Jooyeon. Park<sup>2</sup>, HARI. VIGNESH<sup>1</sup>, \*Yun-Sung. Lee<sup>1</sup>

*전남대.*<sup>1</sup> *전남대학교.*<sup>2</sup> *전남대학교신화학소재공학과.*

PI-3-14

Hierarchically structured activated carbon for supercapacitors

김목화, 손운배, \*노광철

Mok Hwa. Kim, Woonbae. Sohn, \*Kwang Chul. Roh

*한국세라믹기술원.*

PI-3-15

N, F co-doped activated carbon for supercapacitors at high temperature condition

\*노광철, 김주연

\*Kwnag Chul. Roh, Juyeon. Kim

*한국세라믹기술원.*

PI-3-16

Lignocellulosic biomass derived activated carbon with partially graphitic structure

한조아, 임건해, \*노광철

Joah. Han, Geon Hae. Lim, \*Kwang Chul. Roh

*한국세라믹기술원.*

PI-3-17

High performance carbon supercapacitor electrodes derived from a triazine-based covalent organic polymer with regular porosity

김민재, 장석훈, 나은빈, \*심상은

Minjae. Kim, Seokhoon. Jang, Eunbeen. Na, \*Sang Eun. Shim

*인하대학교.*

PI-3-18

Alignment of Carbon Nanofibers and their Electrodeposition Effect of NiCo<sub>2</sub>O<sub>4</sub> for Supercapacitor

장석훈, 김민재, 나은빈, \*심상은

Seokhoon. Jang, Minjae. Kim, Eunbeen. Na, \*Sang Eun. Shim

*인하대학교.*

PI-3-19

Fabrication and characterization of supercapacitor electrodes derived from recycling coffee wastes

나은빈, 김민재, 장석훈, \*심상은

Eunbeen. Na, Minjae. Kim, Seokhoon. Jang, \*Sang Eun. Shim

*인하대학교.*

PI-3-20

Supercapacitor Application of Co-rich Ni-Co-hydroxide synthesized from Co-precipitation method and Their Electrochemical Analysis.

이일복, 배중호, 김재광, 황기범, 김효성, 김나영, \*윤성훈

ilbok. lee, BaeJoongHo. Bae, Jaekwang. Kim, Kee bum. Hwang, Hyosung. Kim, Nayeong. Kim, \*Songhun. Yoon

*중앙대학교.*

PI-3-21

Development of bioinspired pseudocapacitive electrodes for high-performance electrochemical capacitors

이영아, 이지영<sup>1</sup>, 유충열<sup>2</sup>, 박상현<sup>2</sup>, 유정준<sup>2</sup>, 김봉수<sup>1</sup>, \*조우경, \*윤하나<sup>2</sup>

Yeong A. Lee, Jiyoung. Lee<sup>1</sup>, Chung-Yul. Yoo<sup>2</sup>, Sang Hyun. Park<sup>2</sup>, Jung Joon. Yoo<sup>2</sup>, Bongsoo. Kim<sup>1</sup>, \*Woo Kyung. Cho,

\*Hana. Yoon<sup>2</sup>

*충남대학교. <sup>1</sup>KAIST. <sup>2</sup>한국에너지기술연구원.*

PI-3-22

고전압 슈퍼캐패시터용 전극계면 반응 연구

정재원, 이영주, \*정철수

JAEWON. CHUNG, Youngju. Lee, \*Cheolsoo Jung

*서울시립대학교.*

PI-3-23

Functional Additives for the Electrolyte to Improve the High Voltage Performance of EDLCs

김준호, 임라나, \*김점수

Jun Ho. Kim, Rana. Lim, \*Jeom-Soo. Kim

*동아대학교.*

PI-3-24

Quinone derivatives-based pseudocapacitive electrodes for enhanced electrochemical capacitor performance

전재현, 이영아, 이지영<sup>1</sup>, 유충열<sup>2</sup>, 박상현<sup>2</sup>, 유정준<sup>2</sup>, 조우경, \*윤하나<sup>2</sup>

Jaehyun. Jeon, Yeong A. Lee, Jiyoung. Lee<sup>1</sup>, Chung-Yul. Yoo<sup>2</sup>, Sang Hyun. Park<sup>2</sup>, Jung Joon. Yoo<sup>2</sup>, Woo Kyung. Cho,

\*Hana. Yoon<sup>2</sup>

*충남대학교. <sup>1</sup>KAIST. <sup>2</sup>한국에너지기술연구원.*

PI-3-25

Synthesis of rGO@activated carbon composites as an electrode material for supercapacitor to elevate energy density.

최민정, \*연순화<sup>1</sup>, 김성수<sup>2</sup>, 진창수<sup>1</sup>, 신경희<sup>1</sup>

MinJeong. Choi, \*Sun-Hwa. Yeon<sup>1</sup>, Sung-Soo. Kim<sup>2</sup>, Chang-Soo. Jin<sup>1</sup>, Kyoung-Hee. Shin<sup>1</sup>

*한국에너지기술연구원. <sup>1</sup>에너지. <sup>2</sup>충남대학교.*

## PI-4 : Poster Session I(Electrochemical Synthesis of Materials and Applications)

Room **중회의실 로비, 11 월 02 일 16:00 - 17:10**

PI-4-1

Characterization of Black Phosphorene Thin Films deposited using Inkjet Printing Process

전호영, 이언주, \*류시욱

HOYUONG. JUN, EONJU. LEE, \*SiOk. Ryu

*영남대학교.*

PI-4-2

Fabrication of highly conductive nano-particle copper ink for ink-jet printing applications

이언주, 전호영, 박도휘, \*류시욱

EONJU. LEE, HOYUONG. JUN, DOHWI. PARK, \*SIOK. RYU

*영남대학교.*

PI-4-3

Electrochemical conversion of uranium oxide to metallic uranium using carbon anode

\*김성욱, 허동현, 이상권, 전민구, 최은영

\*Sung-Wook. Kim, Dong Hyun. Heo, Sang-Kwon. Lee, Min Ku. Jeon, Eun-Young. Choi

*한국원자력연구원.*

PI-4-4

Color-tunable Mesoporous Bragg Stack Counter Electrodes via Pore-size Control based on Self-assembly of Graft Copolymer for Solid-State Dye-sensitized Solar Cells

이창수, 김진규, 박민수, \*김종학

Chang Soo. Lee, Jin Kyu. Kim, Min Su. Park, \*Jong Hak. Kim

*연세대학교.*

PI-4-5

Preparation of NiO nanosheets/Mesoporous TiN film for supercapacitor electrode

이재훈, 정정표, 박철훈, \*김종학

Jae Hun. Lee, Jung Pyo. Jung, Cheol Hun. Park, \*Jong Hak. Kim

*연세대학교.*

PI-4-6

합성 온도에 따른 철 인화물 전해 도금 박막의 조성 및 전기화학적 특성 변화(Synthesis Temperature Dependence of the Composition and Electrochemical Property of Electrolytic Iron Phosphide)

김호곤, \*신헌철

HOKON. KIM, \*Heon-Cheol. Shin

*부산대학교.*

PI-4-7

Reaction temperature effect on the electrocatalytic CO<sub>2</sub> reduction to formate

\*박기태, 김영은

\*Ki Tae. Park, YOUNG EUN. KIM

*한국에너지기술연구원.*



PI-4-8

Electrochemical CO<sub>2</sub> Reduction to Formate on SnO<sub>2</sub> Nanocatalyst

김영은, \*박기태

Young Eun. Kim, \*Ki Tae. Park

*한국에너지기술연구원.*

PI-4-9

Cascading Alignment of Multilayered SnO<sub>2</sub>/WO<sub>3</sub>/BiVO<sub>4</sub> Inverse Opal Skeletons in Photoelectrochemical Water Splitting

윤건, \*강순형

Gun. Yun, \*Soo Hyung. Kang

*전남대학교.*

PI-4-10

Highly Efficient SolarWaterSplitting from the Modification of TiO<sub>2</sub> Nano rod Arrays.

B.maheswari, \*강순형

maheswari. balamurugan, \*Soo Hyung. Kang

*전남대학교.*

PI-4-11

Electrochemically Fabricated Amorphous Ternary Co-P-B Cathode For Proton Exchange Membrane Water Electrolyzer

김준형, \*안상현, 김현기, 김주영

Junhyeong. Kim, \*Sang Hyun. Ahn, Hyunki. Kim, JOOYOUNG. KIM

*중앙대학교.*

PI-4-12

Ag/In/Cu Foam Catalyst for Electrochemical Conversion of CO<sub>2</sub> to CO

이현주, 김현기, \*안상현

Hyunju. Lee, hyenki. kim, \*Sang Hyun. Ahn

*중앙대학교.*

PI-4-13

Highly efficient oxygen evolution reaction in alkaline and neutral media catalyzed by in situ grown 3D NiCo<sub>2</sub>S<sub>4</sub> nanostructures on carbon cloth

현수연, \*Sangaraju Shanmugam

Hyun. Suyeon, \*Sangaraju. Shanmugam

*DGIST.*

PI-4-14

Hydrophobic Coating on Nanostructured Glass Surface

\*엄재현, 김봉기, 장지상, 서호철

\*Jaehyeon. Eom, Bongki. Kim, Jisang. Jang, Ho-Cheol. Suh

*세종공업(주).*

PI-4-15

연료전지 캐소드 촉매 담지체 부식 방지를 위한 기체 선택성을 가진 애노드 촉매 개발  
장정희, Monika Sharma, 성후광, \*정남기  
Junghee. Jang, Monika. Sharma, Hukwang. Sung, \*Namgee. Jung  
충남대학교에너지과학기술대학원.

PI-4-16

유무기 하이브리드 코어-셸 구조를 갖는 고효율 연료전지 비백금 촉매  
성후광, Monika Sharma, 장정희, \*정남기  
Hukwang. Sung, Monika. Sharma, Junghee. Jang, \*Namgee. Jung  
충남대학교에너지과학기술대학원.

PI-4-17

Ordered Cu Mesostructures for Selective C<sub>2</sub> products from Electrochemical CO<sub>2</sub> Reduction  
송학현, 유상우, \*오지훈  
Hakhyeon. Song, Sangwoo. Ryu, \*Jihun. Oh  
한국과학기술원.

PI-4-18

Enhanced electrochemical CO<sub>2</sub> Reduction by Adsorbed CN and Cl on Au electrode  
조민형  
Minhyung. Cho  
카이스트.

PI-4-19

Electrodeposition of Cu-Ni alloy nanoparticles on FTO as a non-enzymatic hydrogen peroxide sensor  
이혁준, M. M. Rahman<sup>1</sup>, \*이재준  
Lee. HyeokJune, Mohammad Mahbubur. Rahman<sup>1</sup>, \*Jae-Joon. Lee  
동국대학교. <sup>1</sup> 건국대학교.

PI-4-20

TiO<sub>2</sub> nanotube arrays supported RuO<sub>2-x</sub> as efficient gas evolving catalysts  
희성은, \*김진영<sup>1</sup>, \*안상현<sup>2</sup>  
Seong Eun. Heo, \*Jin Young. Kim<sup>1</sup>, \*Sang Hyun. Ahn<sup>2</sup>  
서울대학교공과대학. <sup>1</sup> 서울대학교. <sup>2</sup> 중앙대학교.

PI-4-21

Cu<sub>2</sub>ZnSn(S,Se)<sub>4</sub> Thin-Film Fabricated by Pulsed Reverse Current Electrodeposition  
천기범, 서세원, \*김진영  
kibeom. cheon, Se Won. Seo, \*Jin Young. Kim  
서울대학교.

PI-4-22

Observation of anatase nanograins crystallizing from anodic amorphous TiO<sub>2</sub> nanotubes

박익재, 김진영

Ik Jae. Park, Jin Young. Kim

서울대학교.

PI-4-23

Capacitive Deionization of Aqueous NaCl Solution using Nickel (II) oxide-Activated Carbon Composite Electrodes

김진원, Karl Adrian Gandionco<sup>1</sup>, \*이재영

JinWon. Kim, Karl Adrian. Gandionco<sup>1</sup>, \*Jaeyoung. Lee

광주과학기술원. <sup>1</sup>University of the Philippines Diliman.

PI-4-24

Development of novel electrolytic salts for high voltage Electrical Double Layer Capacitors

송태환, \*이경구, 이상희

Tae-Hwan. Song, \*Kyung-Koo. Lee, Sang-Hee. Lee

군산대학교.

PI-4-25

Band alignment study of PANI/ZnS/ZnO Heterojunctions

\*양비룡

\*Bee Lyong. Yang

금오공과대학교.

PI-4-26

Photocatalytic reduction of carbon dioxide to methanol using Ag-loaded NiO/BaTiO<sub>3</sub>/FTO

\*양비룡

\*Bee Lyong. Yang

금오공과대학교.

PI-4-27

Polyaniline modified ZnO/ZnS heterojunction for enhanced Hydrogen generation

\*양비룡

\*Bee Lyong. Yang

금오공과대학교.

## PI-5 : Poster Session I(여성과학자)

Room 중회의실 로비, 11 월 02 일 16:00 - 17:10

PI-5-1

Antifouling Technologies in Processes Using Ion-Exchange Membranes

김다운, 한수진, 송찬호, 최장욱, 강창완, \*박진수

Da-Eun. Kim, Soo-Jin. Han, Chan-Ho. Song, Jang-UK. Choi, Chang-Wan. Kang, \*Jin-Soo. Park

상명대학교.

## PII-1 : Poster Session II(기후변화대응 수소 및 연료전지 기술 심포지엄)

Room 중회의실 로비, 11 월 03 일 16:20 - 17:20

PII-1-1

Functionalization of Multi-block Poly(arylene ether sulfone ketone) for AMFC Application

NUGRAHA ADAM FEBRIYA, 신동원, \*배병찬

Adam Febriyanto. Nugraha, Dongwon. Shin, \*Byungchan. BAE

한국에너지기술연구원.

#### PII-1-2

Comparison of cationic group on anion exchange multi-block copolymer membrane

ARBI MUTYA RAHMAH, 신동원, 배병찬

MUTYA RAHMAH. ARBI, Dongwon. Shin, Byungchan. BAE

한국에너지기술연구원.

#### PII-1-3

Distinctively High Grain boundary Ionic Conductivity in Cubic Bismuth Oxide

정현준, 정성윤

HYUNJOON. JUNG, Sung-Yoon. Chung

한국과학기술원.

#### PII-1-4

THE EFFECT OF LANTHANUM AND RUBIDIUM ADDITION ON THE OXYGEN REDUCTION IN MOLTEN LITHIUM-SODIUM CARBONATES

SAMUELKOOMSON, 이기정, \*이충곤<sup>1</sup>

SAMUEL. KOOMSON, Ki-jeong. Lee, \*Choong-Gon. Lee<sup>1</sup>

국립한밭대학교. <sup>1</sup> 한밭대학교.

#### PII-1-5

Enhanced Durability of Automotive Fuel Cells via Electrocatalytic Selectivity Imparted by the Electrochromic Metal-Insulator Transition in Tungsten Bronze Supports

윤수원, 장서형<sup>1</sup>, 김준혁, 박신애, 박기웅, 이성규<sup>2</sup>, 백서인<sup>3</sup>, 박병일<sup>4</sup>, 차문순<sup>4</sup>, 여권구<sup>4</sup>, 이훈희<sup>5</sup>, 노범욱<sup>5</sup>, 임태원<sup>5</sup>, 이진우<sup>2</sup>, 정유성<sup>6</sup>, Joshua Snyder<sup>7</sup>, Hoydoo You<sup>8</sup>, Vojislav Stamenkovic<sup>8</sup>, Nenad M. Markovic<sup>8</sup>, \*김용태

Su-Won. Yun, Seohyoung. Chang<sup>1</sup>, Jun-Hyuk. Kim, Shin-Ae. Park, Gi-Woong. Pak, Seonggyu. Lee<sup>2</sup>, Seoin. Back<sup>3</sup>, Byung-il. Park<sup>4</sup>, Moon-Soon. Cha<sup>4</sup>, Gwon Koo. Yeo<sup>4</sup>, Hoonhee. Lee<sup>5</sup>, Bumwook. Roh<sup>5</sup>, Tae Won. Lim<sup>5</sup>, Jinwoo. Lee<sup>2</sup>,

Yousung. Jung<sup>6</sup>, Joshua. Snyder<sup>7</sup>, Hoydoo. You<sup>8</sup>, Vojislav. Stamenkovic<sup>8</sup>, Nenad. M. Markovic<sup>8</sup>, \*Yong-Tae. Kim

부산대학교. <sup>1</sup> 중앙대학교. <sup>2</sup> 포항공과대학교. <sup>3</sup> 한국과학기술원. <sup>4</sup> 오-텍. <sup>5</sup> 현대자동차. <sup>6</sup> KAIST. <sup>7</sup> Drexel

University. <sup>8</sup> Argonne National Laboratory.

#### PII-1-6

고분자 전해질 연료 전지용 산소환원반응을 위한 원자정렬된 백금망간계 고효성 고내구성 합금 촉매

임정훈, 정찬원, 홍두선, \*조은애

JeongHoon. Lim, Chanwon. Jung, Doosun. Hong, \*EunAe. Cho

한국과학기술원.

#### PII-1-7

Nano-structure of PtIr Electrocatalyst via Electrochemical Dealloying Method and Their Enhanced Electrocatalytic Activity/Stability for Unitized Regenerative Fuel Cell(URFC)

정상문, 윤수원, 김준혁, 박신애, \*김용태

Sang-Mun. Jung, Su-Won. Yun, Jun-Hyuk. Kim, Shin-Ae. Park, \*Yong-Tae. Kim

*부산대학교.*

#### PII-1-8

Highly efficient and robust multiscale Pt nanoarchitecture electrode for polymer electrolyte membrane fuel cells

김종민, 이경아<sup>1</sup>, \*김진영<sup>1</sup>, \*정연식

Jongmin. Kim, Kyungah. Lee<sup>1</sup>, \*Jinyoung. Kim<sup>1</sup>, \*Yeonsik. Jung

*한국과학기술원. <sup>1</sup> 한국과학기술연구원.*

#### PII-1-9

Exfoliated Metal Oxide 2D Nanosheets as Additives for Improving Oxygen Reduction Reaction Activity of Graphene

JIN XIAOYAN, 임주현, 이남석<sup>1</sup>, \*황성주

Xiaoyan. Jin, Joohyun. Lim, Nam-Suk. Lee<sup>1</sup>, \*Seong-Ju. Hwang

*이화여자대학교. <sup>1</sup> 포항공과대학교.*

#### PII-1-10

An Effective and Universal Route to High Performance Electrocatalyst with Metallic RuO<sub>2</sub> Nanosheet

권남희, JIN XIAOYAN, \*황성주

Nam Hee. Kwon, Xiaoyan. Jin, \*Seong-Ju. Hwang

*이화여자대학교.*

#### PII-1-11

Bifunctional MnO<sub>2</sub>-based Electrocatalysts with Control of Manganese Covalency and Bond Competition

강보현, JIN XIAOYAN, 오승미, \*황성주

Bohyun. Kang, Xiaoyan. Jin, Seung-Mi. Oh, \*Seong-Ju. Hwang

*이화여자대학교.*

#### PII-1-12

Effects of carbon support and heat treatment on the catalytic activity and stability for oxygen reduction reaction

이봉호, 김도형, 이승우, 최윤석<sup>1</sup>, 김지만<sup>1</sup>, \*박찬호

Bongho. Lee, Do Hyung. Kim, Seung WOO. Lee, Yun Seok. Choi<sup>1</sup>, JIman. Kim<sup>1</sup>, \*Chanho. Pak

*광주과학기술원. <sup>1</sup> 성균관대학교화학과.*

#### PII-1-13

Investigation of the Preparation Method for Oxygen Evolution Reaction Catalysts using Ordered Mesoporous Supports by Impregnation Method

이승우, 김도형, 이봉호, 최윤석<sup>1</sup>, 김지만<sup>1</sup>, \*박찬호

Seungwoo. Lee, Do Hyung. Kim, Bong Ho. Lee, Yun Seok. Choi<sup>1</sup>, Ji Man. Kim<sup>1</sup>, \*Chanho. Pak

*광주과학기술원. <sup>1</sup> 성균관대학교.*

#### PII-1-14

Iron sulfide loaded carbon nanotube –graphene composite (FeS/CNT-GR) for Oxygen reduction reaction

채규식

GyuSik. Chae

*포항공과대학교.*

PII-1-15

Effect of Acceptor-Vacancy Clustering on Proton Conduction in Perovskite Oxides

김혜성, 장아름, 최시영<sup>1</sup>, 정우철, \*정성윤

Hye-Sung. Kim, Ahreum. Jang, Si-Young. Choi<sup>1</sup>, WooChul. Jung, \*Sung-Yoon. Chung

*Korea Advanced Institute of Science and Technology (KAIST). <sup>1</sup>Pohang University of Science and Technology (POSTECH).*

PII-1-16

고분자 전해질 연료 전지 (PEMFC) 용 고효성 · 고내구성 다공성 Fe-N-CNF 지지체 개발

박준우, 김민중<sup>1</sup>, 임정훈<sup>1</sup>, \*조은애

Junu. Bak, MinJoong. Kim<sup>1</sup>, JEONGHOON. LIM<sup>1</sup>, \*EUNAE. CHO

*KAIST. <sup>1</sup>한국과학기술원.*

PII-1-17

PtIr/Ti4O7 as a bifunctional electrocatalyst for unitized regenerative fuel cells

원지은, 김도형, 마경배, 곽다희, 윤석현, 권속희, 박경원

Ji EUN. WON, Dohyoung. Kim, KyengBae. Ma, DaHee. Kwak, Seok Hyeon. Yun, SUK HUI. KWON, Kyung Won. Park

*승실대학교.*

PII-1-18

the effect of arginine as nitrogen doping carbon source for enhanced oxygen reduction reaction

김도형, 곽다희, 한상범, 원지은, 마경배, 윤석현, 권속희, 박경원

Dohyoung. Kim, DaHee. Kwak, Sang Beom. Han, Ji EUN. Won, KyengBae. Ma, Seok Hyeon. Yun, SUK HUI. KWON,

Kyung-Won. Park

*승실대학교.*

PII-1-19

Ultra-low Pt nanoparticles deposited on nitrogen and iron doped porous carbon support for enhanced oxygen reduction reaction

권속희, 김도형, 마경배, 곽다희, 원지은, 윤석현, 한상범, \*박경원

Suk Hui. Kwon, Dohyoung. Kim, KyengBae. Ma, DaHee. Kwak, Ji Eun. Won, Seok Hyeon. Yun, Sang Beom. Han,

\*Kyung-Won. Park

*승실대학교.*

PII-1-20

Nitrogen and iron co-doped carbon cathode electrocatalyst for direct ethanol fuel cells

마경배, 한상범, 곽다희, 김도형, 원지은, 윤석현, 권속희, \*박경원

KyengBae. Ma, Sang Beom. Han, DaHee. Kwak, Dohyoung. Kim, Ji EUN. Won, Seok Hyeon. Yun, SUK HUI. KWON,

\*Kyung-Won. Park

*승실대학교.*

PII-1-21

전기 도금을 이용한 고온 고분자 전해질 연료 전지용 Pt-M 합금 촉매 개발

김동권, 김호영, 박현주, \*김수길

Dong-Kwon. Kim, Hoyoung. Kim, Hyanjoo. Park, \*Soo-Kil. Kim

*중앙대학교.*

PII-1-22

3D Nanostructured Thin Film Catalyst for Oxygen Evolution Reaction Fabricated through Solvent Assisted Nanotransfer Printing with Enhanced Efficiency and Stability

김예지, \*정연식

YEJI. KIM, \*Yeon Sik. Jung

*한국과학기술원.*

PII-1-23

고체 산화물 연료 전지 (SOFC) 시스템 동적 모델을 이용한 시스템 열관리 제어 인자 연구 A Study on the Control Parameters for the Thermal Management of Solid Oxide Fuel Cell (SOFC) System Using 1-D Dynamic Mathematical Model

이율호, 김제도, \*박성진

Yulho. Lee, Jedo. Kim, \*Sungjin. Park

*홍익대학교.*

PII-1-24

Nano-rippled Cu electrocatalyst derived from graphene for high CO<sub>2</sub> conversion

김주예, \*정희태

Ju Ye. Kim, \*Hee-tea. Jung

*KAIST.*

PII-1-25

Iron, nitrogen and sulfur-doped carbons as Pt catalyst supports for oxygen reduction reaction in proton exchange membrane fuel cells

윤석현, 한상범, 곽다희, 마경배, 원지은, 김도형, 권숙희, \*박경원

Seok Hyeon. Yun, Sang Beom. Han, DaHee. Kwak, KyengBae. Ma, Won. JI EUN, Dohyoung. Kim, SUK HUI. KWON,

\*Kyung-Won. Park

*승실대학교.*

PII-1-26

The effect of transition metal substitution in cobalt based spinel oxide

이성규, 김성섭, 육솔<sup>1</sup>, \*이진우

Seonggyu. Lee, Seongseop. Kim, Sol. Youk<sup>1</sup>, \*Jinwoo. Lee

*포항공과대학교. <sup>1</sup> 포항공대.*

PII-1-27

Water Level Sensor for Fuel Cell Water Trap

\*엄재현, 장석윤, 김봉기

\*Jaehyeon. Eom, Seok-yun. Jang, Bongki. Kim

*세종공업(주).*

PII-1-28

Output Drift of MEMS Type Low Power Transducer Pressure

\*엄재현, 김봉기, 장석윤

\*Jaehyeon. Eom, Bongki. Kim, Seok-yun. Jang

세종공업(주).

PII-1-29

Nitrogen-doped titanium oxide as a high durable catalyst support in PEMFC 질소 도핑된 산화 티타늄 지지체를 이용한 PEMFC 용 공기 촉매 개발

이용준, 최현지, 이기백, \*탁용석

Eungjun. Lee, Hyeonji. Choi, Gibaek. Lee, \*Yongsug. Tak

인하대학교.

PII-1-30

HOR-selective Electrocatalysis via Fine Tuning of Pt ensemble sites to Enhance the Durability of Automotive Fuel Cells

김용태, 윤수원, 박신애, 김태준, 박기웅

Yong-Tae. Kim, Su won. Yun, Shin ae. Park, Taejune. Kim, Gi-Woong. Park

부산대학교.

PII-1-31

In situ Activation of A site deficient Strontium Titanate based oxide as a Potential Ceramic Anode for Redox stable SOFCs

김한빛, \*신태호, 신미영, 오미영

Hanbit. Kim, \*Tae Ho. Shin, MIYOUNG. SHIN, Mi-Young. Oh

한국세라믹기술원.

PII-1-33

Transition metal oxide-based bifunctional electrocatalysts for unitized reversible fuel cells

\*박준영, 최성렬, 김남인

\*Jun-Young. Park, Sung Ryul. Choi, Nam-In. Kim

세종대학교.

이석

PII-1-34

Transition metal sulfides with nickel-foam as an efficient catalyst for water-splitting cells

\*박준영, Rana Arslan Afzal, 김남인, 김유동, 이성원

\*Jun-Young. Park, Rana Arslan. Afzal, Nam-In. Kim, You-dong. Kim, Sungwon. Lee

세종대학교.

PII-1-36

Solar energy conversion by immobilized cyanobacteria on the carbon ash-coated electrode through absorbed thionine

강나혜

Nahye. Kang

건국대학교.



## PII-2 : Poster Session II(Electrochemistry on demand I)

Room 중회의실 로비, 11 월 03 일 16:20 - 17:20

PII-2-1

Highly Active and Selective Au thin layer on Cu Polycrystalline Surface Prepared by Galvanic Displacement for the Electrochemical Reduction of CO<sub>2</sub> to CO

귀원/GUO WEN, 김준혁<sup>1</sup>, 우현재<sup>1</sup>, \*김용태<sup>1</sup>

Wen. GuO, Jun-Hyuk. Kim<sup>1</sup>, Hyunje. Woo<sup>1</sup>, \*Yong-Tae. Kim<sup>1</sup>

*부산대학교기계공학부대학원.<sup>1</sup> 부산대학교.*

PII-2-2

A Study of Oxidized Oxygen Evolution Reaction Catalysts Activity and Stability in acid

정현우, 박신애, \*김용태

Hyun-Woo. Jung, Shin-Ae. Park, \*Yong-Tae. Kim

*부산대학교.*

PII-2-3

Glyme-based nonaqueous electrolyte for highly efficient thermo-galvanic cells using Li<sup>+</sup>/Li Redox couple

김경구, \*이호춘

Kyung Gu. Kim, \*Hochun. Lee

*대구경북과학기술원.*

PII-2-4

GO Coating on Non-noble Current Collectors for Enhanced Electrochemical Stability and Corrosion Suppression in APC type electrolyte for Magnesium Ion Battery

Richard Prabakar, \*표명호

Richard. Prabakar, \*Myounggho. Pyo

*순천대학교.*

PII-2-5

Magnesium trifluoromethanesulfonate-based complex electrolyte system with wide electrochemical windows for rechargeable magnesium ion batteries

Ikhe Amol Bhairuba, \*표명호

Amol. Ikhe, \*Myounggho. Pyo

*순천대학교.*

PII-2-6

Synthesis and Electrochemical Studies of Tungsten Mixed MnO<sub>2</sub> Nanoflowers Film Modified Platinum Electrode

RAJESH RAJAGOPAL

RAJESH. RAJAGOPAL

*울산대학교화학과.*

## PII-3 : Poster Session II(Electrochemistry on demand II)

Room 중회의실 로비, 11 월 03 일 16:20 - 17:20

PII-3-1

Electrochemical Biosensor Platform for Detection of Matrix Metalloproteinase-9 (MMP-9) in Urine as a Bladder Cancer Biomarker

송성아, 김성은

sunga. song, Seong-Eun. Kim

*전자부품연구원.*

#### **PII-4 : Poster Session II(차세대 태양전지 및 요소기술)**

#### **Room 중회의실 로비, 11 월 03 일 16:20 - 17:20**

PII-4-1

Ultrafast Flame Annealing of TiO<sub>2</sub> Paste for Fabricating Dye-Sensitized and Perovskite Solar Cells with Enhanced Efficiency

김정규, 채성욱<sup>1</sup>, \*박종혁<sup>1</sup>

Jung kyu. Kim, Sung Uk. Chai<sup>1</sup>, \*Jong Hyeok. Park<sup>1</sup>

*StanfordUniversity. <sup>1</sup> 연세대학교.*

PII-4-2

Solar water splitting improved on Perovskite Photocathode Performance by metal protection and catalyst

남성식, \*오일환

seongsik. NAM, \*ilwhan. OH

*금오공과대학교.*

PII-4-3

Preparation of CdS thin films

장기준, 연유범, \*이치우

Kee-Jun. Chang, Yu-Beom. Yeon, \*Chi-Woo. Lee

*고려대학교.*

PII-4-4

Copper sulfide counter electrodes of QDSSCs using Cu-Zn alloy

채지영, 권종명, 비야야쿠마/VIJAYKUMAR, ANTHUVAN RAJESH, \*안광순

Jiyoung. Chae, Jong Myeong. Kwon, vijayakumar. Elayappan, Anthuvan. Rajesh, \*Kwang-Soon. Ahn

*영남대학교.*

PII-4-5

Electrochemically deposited Cu<sub>2</sub>S/PbS composite structured counter electrode for cadmium selenide quantum dot-sensitized solar cells

윤용한, 권종명, 비야야쿠마/VIJAYKUMAR, \*안광순

YUN. YONG HAN, Jong Myeong. Kwon, vijayakumar. Elayappan, \*Kwang-Soon. Ahn

*영남대학교.*

PII-4-6

Facile Electrochemical synthesis of Manganese Cobalt Sulfide based ternary transition metal sulfide transparent counter electrode for quantum dot-sensitized solar cells

비야야쿠마/VIJAYKUMAR, 권종명, \*안광순  
vijayakumar. Elayappan, Jong Myeong. Kwon, \*Kwang-Soon. Ahn  
영남대학교.

PII-4-7

Excellent electrocatalytic activity and stability of electrodeposited NiS counter electrode for the quantum dot-sensitized solar cells

부홍빈 뷔이/VUHONGVINHQUY, \*안광순  
Vu. Quy, \*Kwang-Soon. Ahn  
영남대학교.

PII-4-8

Efficient atomic ligand passivation using controlled organic counterparts for colloidal quantum dot solar cells

박다습  
Dasom. Park  
국민대학교.

PII-4-9

Influence of  $TiCl_4$  Solution Concentration in the Post-Treatment of  $TiO_2$  Layer on the Performance of Hybrid Lead Halide Perovskite Solar Cells

최근표, \*임상규  
Choe. GuenPyo, \*Yim. Sanggyu  
국민대학교.

PII-4-10

Pt-free counter electrode based on CoSn nanoalloy/reduced graphene oxide as a new avenue for liquid junction photovoltaic devices

오효준, \*Van-Duong Dao, \*최호석  
Hyo-Jun. Oh, \*Van-Duong. Dao, \*Ho-Suk. Choi  
충남대학교.

PII-4-11

Ion Migration in Lateral Structure Organometal Trihalide Perovskite Solar Cells

이석원, \*오일환  
Seok Won. Lee, \*ilwhan. OH  
금오공과대학교.

PII-4-12

Enhanced electrocatalytic performance of Pt nanoparticles on triazine-functionalized graphene nanoplatelets for both oxygen and iodine reduction reactions

장부재, 권도형, 전인엽<sup>1</sup>, 김성욱, \*주명종, \*백종범  
Boo Jae. Jang, Do Hyeong. Kwon, In-Yup. Jeon<sup>1</sup>, Sung-Wook. Kim, \*Myung Jong. Ju, \*Jong-Beom. Baek  
UNIST(울산과학기술원). <sup>1</sup> 원광대학교.

PII-4-13

Investigations into  $TiO_2$  particle size effect on cobalt (II/III) redox couple-based organic dye-sensitized solar cells

손윤준, 강진수<sup>1</sup>, \*박현서<sup>2</sup>, \*성영은<sup>1</sup>

Yoon Jun. Son, Jin Soo. Kang<sup>1</sup>, \*Hyun S.. Park<sup>2</sup>, \*Yung-Eun. Sung<sup>1</sup>

*서울대학교공과대학. <sup>1</sup> 서울대학교. <sup>2</sup> 한국과학기술연구원.*

## **PII-5 : Poster Session II(General session)**

**Room 중회의실 로비, 11 월 03 일 16:20 - 17:20**

PII-5-1

ITO film 에 silver grid 를 도입한 flexible electrochromic

이지은, 이영우<sup>1</sup>, \*조국영<sup>1</sup>

Lee. JiEun, Youngwoo. Lee<sup>1</sup>, \*KUK YOUNG. CHO<sup>1</sup>

*한양대학교기능성유기재료실험실. <sup>1</sup> 한양대학교.*

PII-5-2

Study of the effects of Li-ion content in WO<sub>3</sub> electrode on electrochromic performance

CYRIL BUBU DZAKPASU, 한태영<sup>1</sup>, WILLIAMSAPPIAHAGYEI, \*유명현<sup>1</sup>, \*이용민

CYRIL BUBU. DZAKPASU, Taeyeong. Han<sup>1</sup>, APPIAH. WILLIAMS AGYEI, \*Myung-Hyun. Ryou<sup>1</sup>, \*Yong Min. LEE

*대구경북과학기술원. <sup>1</sup> 한밭대학교.*

PII-5-3

Redox indicators 를 이용한 수계 Redox flow battery

홍지훈, \*김기택

Jeehoon. Hong, \*Ketack. Kim

*상명대학교.*

PII-5-4

Direct electrochemistry and electrocatalysis of cytochrome c-copper nanoflower at a conducting polymer modified electrode

문종민, \*심윤보<sup>1</sup>

Jong-Min. Moon, \*Yoon-Bo. Shim<sup>1</sup>

*부산대학교화학과. <sup>1</sup> 부산대학교.*

PII-5-5

Electrochemical detection of rocuronium using conducting polymer/lipid/porous carbon composite in human blood samples

정새로미, 황부영<sup>1</sup>, \*심윤보

Saeromi. Chung, Boo Young. Hwang<sup>1</sup>, \*Yoon Bo. Shim

*부산대학교. <sup>1</sup> 부산대학교병원.*

## **PII-6 : Poster Session II(Post-LIB)**

**Room 중회의실 로비, 11 월 03 일 16:20 - 17:20**

PII-6-1

An oxide pyrochlore supported on reduced graphene oxide as an oxygen reduction reaction catalyst for metal-air batteries.

나수빈, 이보은, 윤투영<sup>1</sup>, \*오시형

Subin. Na, Boeun. Lee, Woo-Young. Yoon<sup>1</sup>, \*Si Hyoung. Oh

한국과학기술연구원. <sup>1</sup> 고려대학교.

#### PII-6-2

Accelerated lithium-ion transport of a PEO-based solid polymer electrolyte with surface-modified natural halloysite nanotubes

김글한, 이종성, 류잉, 황규홍, \*안주현, \*이윤기

Geulhan. Kim, Jongseong. Lee, Ying. Liu, Kyu Hong. Hwang, \*Jou-Hyeon. Ahn, \*Youunki. Lee

경상대학교.

#### PII-6-3

Novel 2-D metal-sulfide materials for the next-generation Li/Na-ion batteries

장의진, \*엄광섭

Chang. Uijin, \*KwangSup. Eom

광주과학기술원.

#### PII-6-4

Novel tellurium-sulfide cathode material with high-capacity and stability for Li-ion battery

이승민, \*엄광섭

Seungmin. Lee, \*Kwangsup. Eom

광주과학기술원.

#### PII-6-5

Improved Performances of Sodium-Sulfur Battery via in-situ Electrochemical SEI Formation Technique

이현기, \*엄광섭

Hwonki. Lee, \*KwangSup. Eom

광주과학기술원.

#### PII-6-6

탄소계 물질 코팅 분리막을 통한 리튬-황 전지의 전기화학적 성능 향상에 관한 연구

조혜린, 송다노<sup>1</sup>, 오정훈, 오성록, 이용민<sup>2</sup>, \*유명현<sup>3</sup>

hearin. Jo, song. dano<sup>1</sup>, jeonghun. Oh, Oh. sung rock, Yong Min. LEE<sup>2</sup>, \*Myung-Hyun. Ryou<sup>3</sup>

국립한밭대학교. <sup>1</sup> 한밭대학교응용화학과. <sup>2</sup> 대구경북과학기술원. <sup>3</sup> 한밭대학교.

#### PII-6-7

소듐전지용 Polydopamine 코팅 분리막 연구

이승민, 김석우, 이용민<sup>1</sup>, 유명현

Seungmin. Lee, Seok Woo. Kim, Yong Min. Lee<sup>1</sup>, Myung-Hyun. Ryou

국립한밭대학교. <sup>1</sup> 대구경북과학기술원.

#### PII-6-8

Crater-like architectural aluminum current collectors with superior electrochemical performance for Li-ion batteries

김솔이, 윤수근, 이성윤

sol lee. kim, sukeun. yoon, Lee. Sungyun

공주대학교.

PII-6-9

Nonaqueous Rechargeable Magnesium-Ion Batteries Using Potassium Nickel Hexacyanoferrate as a High-Voltage Cathode Material

채문석, 형주은<sup>1</sup>, 장민철<sup>2</sup>, 이호춘, \*홍승태<sup>1</sup>

Munseok. Chae, Joeeun. Hyoung<sup>1</sup>, Minchul. Jang<sup>2</sup>, Hochun. Lee, \*Seung-Tae. Hong<sup>1</sup>

*DGIST. <sup>1</sup>대구경북과학기술원. <sup>2</sup>LG 화학.*

PII-6-11

Effect of Mesocellular Carbon Foam as Electrode Materials in Vanadium Redox Flow Battery

정주영, 김서아, 이준상, \*권용재<sup>1</sup>, \*이진우

Jooyoung. Jeong, Seoa. Kim, Junsang. Lee, \*Yongchai. Kwon<sup>1</sup>, \*Jinwoo. Lee

*포항공과대학교. <sup>1</sup>서울과학기술대학교.*

PII-6-13

Electrochemical performance and manufacturing process of a lower temperature operating sodium beta-alumina battery (LT-NBB)

손소리, 박윤철, Hee Jung Chang<sup>1</sup>, GuohengLi<sup>1</sup>, 이윤기<sup>2</sup>, \*정기영

SORI. SON, Yoon-Chul. Park, Hee Jung. Chang<sup>1</sup>, Guosheng. Li<sup>1</sup>, Younki. Lee<sup>2</sup>, \*Keeyoung. Jung

*포항산업과학연구원. <sup>1</sup>Pacific Northwest National Laboratory. <sup>2</sup>경상대학교.*

PII-6-14

고분자 황 전극의 전기전도성 개선을 통한 리튬-황 전지 성능 향상 개선방안 연구

박진규, 박지연, 오성록, 이용민<sup>1</sup>, \*유명현

Jinkyu. Park, Jiyeon. park, seong rock. Oh, Yong Min. LEE<sup>1</sup>, \*Myung-Hyun. Ryou

*국립한밭대학교 화학생명공학과. <sup>1</sup>대구경북과학기술원.*

PII-6-15

Electrochemical characterization of VOPO<sub>4</sub>·2H<sub>2</sub>O as a new cathode material for potassium-ion batteries

형주은, 허종욱<sup>1</sup>, 채문석<sup>1</sup>, \*홍승태

Joeeun. Hyoung, Jong Wook. Heo<sup>1</sup>, Mun-Seok. Chae<sup>1</sup>, \*Seung-Tae. Hong

*대구경북과학기술원. <sup>1</sup>DGIST.*

PII-6-16

Effects of Mg doping on the cycle performance of Na[Ni<sub>1/3</sub>Fe<sub>1/3</sub>Mn<sub>1/3</sub>]O<sub>2</sub> cathode electrode for sodium-ion battery

신현섭, \*정규남

Hyunseop. SHIN, \*Kyu-Nam. Jung

*한국에너지기술연구원.*

PII-6-17

Ionic-liquid-contained composite electrode with improved interfacial resistance for all-solid-state lithium battery

신현섭, \*정규남

Hyun-Seop. Shin, \*Kyu-Nam. Jung

*한국에너지기술연구원.*

PII-6-18

Screening of functional electrolyte additives for sodium-ion batteries.

강병선, 김동휘, 유승일<sup>1</sup>, 박재환<sup>1</sup>, 유지상<sup>2</sup>, 김경수<sup>3</sup>, \*이호춘

Byung-Sun. Kang, Kim Donghui. , Seung-il. Yoo<sup>1</sup>, Jae-Hwam. Park<sup>1</sup>, Ji-Sang Yu. <sup>2</sup>, KyungSu. KIM<sup>3</sup>, \*Hochun. Lee.

대구경북과학기술원. <sup>1</sup>파낙스이텍. <sup>2</sup>전자부품연구원. <sup>3</sup>전자부품연구원차세대전지연구센터.

PII-6-19

Li-O<sub>2</sub> batteries separator for maximizing the effect of the soluble catalyst

이선화

Seon-Hwa. Lee

한양대학교.

PII-6-20

An electrolyte additive for reversible electrochemical deposition/dissolutions of magnesium

강성진, 김현지, 황순욱, 장민철<sup>1</sup>, 홍승태, \*이호춘

Sung-Jin. Kang, Hyeonji. Kim, Sun-wook. Hwang, Minchul. Jang<sup>1</sup>, Seung-Tae. Hong, \*Hochun. Lee

대구경북과학기술원. <sup>1</sup>LG 화학.

PII-6-21

Optimized Bicompartement Cells system for Effective and Stable Operation of Li-O<sub>2</sub>

김훈

Hun. Kim

한양대학교.

PII-6-22

Synthesis and structure of Li<sub>4-x</sub>Al<sub>1-x</sub>Si<sub>x</sub>SbO<sub>6</sub> as a potential solid electrolyte for all-solid-state Li-ion batteries

김효정, 곽헌호, \*홍승태

HYOJEONG. KIM, Hun ho. Kwak, \*Seung-Tae. Hong

대구경북과학기술원.

PII-6-23

A new strontium vanadate: synthesis, structure and Sr<sup>2+</sup> ion intercalation chemistry

곽헌호, \*홍승태

Hun ho. Kwak, \*Seung-Tae. Hong

대구경북과학기술원.

PII-6-24

A hydrocarbon/Nafion bilayer membrane with a mechanical nano-fastener for vanadium redox flow batteries

김수현, 육성민, 김현규, 최찬용, 김리울, 이장용<sup>1</sup>, 홍영택<sup>1</sup>, \*김희탁

Soohyun. Kim, Seongmin. Yuk, Hyun Gyu. Kim, Chanyong. Choi, Riyul. Kim, Jang Yong. Lee<sup>1</sup>, Young Taik. Hong<sup>1</sup>,

\*Hee-Tak. Kim

한국과학기술원. <sup>1</sup>한국화학연구원.

PII-6-25

VO<sub>2</sub>: a new cathode material for potassium ion batteries

유제인, 형주은, \*홍승태

Jeyne. Lyoo, Joeeun. Hyoung, \*Seung-Tae. Hong

대구경북과학기술원.

PII-6-26

Calcium ion intercalation into  $\text{Na}_x\text{V}_2(\text{PO}_4)_3$ , as a cathode material for Ca batteries

전부식, 허종욱<sup>1</sup>, \*홍승태

boo sik. Jeon, Jong Wook. Heo<sup>1</sup>, \*Seung-Tae. Hong

대구경북과학기술원. <sup>1</sup>DGIST.

PII-6-27

Electronic structure of  $\text{Li}_x\text{CoO}_2$  ( $x = 1.0, 0.5, 0.0$ ) dependent on asymmetric electron density variation by lithium ion vacancy

강효식, \*이상훈

Hyosik. Kang, \*Sanghum. Lee

가천대학교.

PII-6-28

Na Storage Capability Investigation of Iron-Sulfide encapsulated in carbon nanotube Composite as anode materials for Na-ion batteries

\*유태연

\*Yu. Tae-Yeon

한양대학교.

PII-6-29

Sea urchin-like  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  nanostructure as a Li-Ion battery anode with high energy density and improved ionic transport

김민철, 문상현, 신연경, 이지은, 최소정, 김은수, \*박경원

Min Cheol. Kim, Sang-Hyun. Moon, YEONKYUNG. SHIN, Jieun. Lee, sojeong. choi, EUN SOO. KIM, \*Kyung-Won. Park

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PII-6-30

Observation of nucleation and growth process of lithium metal as a negative electrode

김수정, \*변혜령

Sujung. Kim, \*Hye Ryung. Byon

한국과학기술원.

PII-6-31

Influence of Li-salt dissociation in glyme solutions on electrochemical performance of Li-O<sub>2</sub> batteries

이혜진, 황순욱, \*이호춘

Hyejin. Lee, Sunwook. Hwang, \*Hochun. Lee

DGIST.

PII-6-32

Gel polymer electrolytes for high-voltage  $\text{LiMn}_2\text{O}_4$  in lithium-ion batteries



신연경, 김민철, 문상현, 김은수, 이지은, 최소정, \*박경원

YEONKYUNG. SHIN, Min Cheol. Kim, Sang-Hyun. Moon, EUN SOO. KIM, Jieun. Lee, sojeong. choi, \*Kyung-Won. Park  
숭실대학교.

PII-6-33

Carbon coated octahedral copper oxide for high-rate performance lithium ion batteries

김은수, 김민철, 문상현, 신연경, 이지은, 최소정, \*박경원

EUN SOO. KIM, Min Cheol. Kim, Sang-Hyun. Moon, YEONKYUNG. SHIN, Jieun. Lee, sojeong. choi, \*Kyung-Won. Park  
숭실대학교.

PII-6-34

Enhanced cycling stability of MoS<sub>2</sub>-TiN thin film electrodes for lithium ion batteries

문상현, 김민철, 김은수, 최소정, 신연경, 이지은, \*박경원

Sang-Hyun. Moon, Min Cheol. Kim, EUN SOO. KIM, sojeong. choi, YEONKYUNG. SHIN, Jieun. Lee, \*Kyung-Won. Park  
숭실대학교.

PII-6-35

Control of microstructural distribution of the constituents in composite cathodes for enhanced performance all-solid-state batteries

노성우, 최선호, 박찬휘, \*신동욱

SUNGWOO. Noh, Sun ho. Choi, Chanhwi. Park, \*Dongwook. Shin  
한양대학교.

PII-6-36

Over-lithiated layered oxide cathode materials with enhanced electrochemical performance for lithium-ion batteries

이지은, 김민철, 문상현, 김은수, 신연경, 최소정, \*박경원

Jieun. Lee, Min Cheol. Kim, Sang-Hyun. Moon, EUN SOO. KIM, YEONKYUNG. SHIN, sojeong. choi, \*Kyung-Won. Park  
숭실대학교.

PII-6-37

Cycling Characteristics of Tin-based Alloy-Carbon Composite Anode for Magnesium-ion Batteries

누엔티흐영지앙, Nguyen Dan Thien, \*송승완

Thi Huong Giang. Nguyen, Nguyen. Dan Thien, \*Seung-Wan. Song  
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PII-6-38

3D nanostructured Si/CNF electrode with improved electrochemical performance for lithium ion batteries

최소정, 김민철, 문상현, 신연경, 이지은, 김은수, \*박경원

Sojeong. Choi, Min Cheol. Kim, Sang-Hyun. Moon, YEONKYUNG. SHIN, Jieun. Lee, EUN SOO. KIM, \*Kyung-Won. Park  
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PII-6-39

Novel High-Energy KVP<sub>2</sub>O<sub>7</sub> of Potassium ion batteries.

한수철, \*표명호

SuCheol. Han, \*MyoungHo. Pyo

*순천대학교.*

PII-6-40

Reversible potassium intercalation/de-intercalation into O3-NaCrO<sub>2</sub> host structure

NIRMALESH NAVEEN, \*표명호

NIRMALESH. NAVEEN, \*MyoungHo. pyo

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PII-6-41

PEDOT microflower 를 활용한 공기극과 redox mediator 도입을 통한 리튬공기 이차전지의 사이클 특성 향상

윤선혜, \*박용준

SEON HYE. YOON, \*YONG JOON. PARK

*경기대학교.*

PII-6-42

Tin-based Alloy as a High Performance Anode Material for Mg-ion Batteries

Nguyen Dan Thien, Nguyen Thi Huong Giang, \*Seung-Wan Song

Nguyen. Dan Thien, Nguyen. Thi Huong Giang, \*Seung-Wan. Song

*충남대학교.*

PII-6-43

Anisotropic ionic transport in a zirconia-reinforced Na-β"-alumina composite thick film

김혜란, \*이윤기

Hearan. Kim, \*Younki. Lee

*경상대학교.*

PII-6-44

High Performance Sulfur Composite Cathode for High Energy and Safe Li-ion Sulfur Batteries

Nguyen Dan Thien, Alexander Hoefling<sup>1</sup>, Young-Joo Lee<sup>1</sup>, Patrick Theato<sup>1</sup>, \*Seung-Wan Song

Nguyen. Dan Thien, Alexander. Hoefling<sup>1</sup>, Young-Joo. Lee<sup>1</sup>, Patrick. Theato<sup>1</sup>, \*Seung-Wan. Song

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PII-6-45

The effects of surface coating on LiCoO<sub>2</sub> with sulfate for all-solid-state lithium ion batteries

조문주, 노성우, 박찬휘, 윤인상, \*신동욱

Moonju. Cho, SUNGWOO. NOH, Chanhwi. Park, Insang. Yoon, \*Dongwook. Shin

*한양대학교.*

PII-6-46

Enhanced electrochemical stability of sulfide based glass ceramics electrolyte by oxide substitution for all-solid state-lithium secondary battery.

손진오, 이상수, 안지유, 박찬휘, 신동욱

Jinoh. Son, sangsoo. Lee, ji-u. Ann, Chanhwi. Park, Dongwook. shin

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PII-6-47

Electrochemical performance of All-Solid-State Lithium-Sulfur Batteries with pulverization of cathode material using mechanical milling

박종엽, 최선호, 박찬휘, \*신동욱

jong yeop. park, Sunho. Choi, Chanhwi. Park, \*Dongwook. Shin

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PII-6-48

New Insights in designing stable layered cathode materials for sodium ion batteries

HARI VIGNESH, RAMKUMAR B<sup>1</sup>, \*이윤성, 공민경<sup>1</sup>, 김소영, 박주연<sup>1</sup>

HARI. VIGNESH, RAMKUMAR. BALASUBRAMANIAM<sup>1</sup>, \*Yun-Sung. Lee, MinKyung. Gong<sup>1</sup>, Soyoung. Kim, Jooyeon.

Park<sup>1</sup>

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PII-6-49

Flame-Retardant Phosphonate Ligand based Novel Organic Redox Material for Li-ion Batteries

이현호, \*홍성유

Hyun Ho. Lee, \*Sung You. Hong

*UNIST.*

PII-6-50

Electrospun Carbon Nanofiber as an Effective Interlayer for Enhanced Performance of Lithium-Sulfur Batteries

DUC TUNG NGO, 김한별, \*박찬진

Duc Tung. Ngo, Han-Byeol. Kim, \*Chan-Jin. Park

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PII-6-51

Electrochemical characteristics of self-encapsulated Sb/C nanocomposite anode coupled with Na<sub>3</sub>V<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub> cathode for Na-ion batteries

XUAN MANH PHAM, DUC TUNG NGO, HANG T. T. LE, RAKESH, PRAVIN DIDWAL, \*박찬진

Xuan Manh. Pham, Duc Tung. Ngo, Hang T. T.. Le, Rakesh. Verma, Pravin. Didwal, \*Chan-Jin. Park

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PII-6-52

Interconnected, microporous particles of NASICON type Na<sub>3</sub>V<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub>@C composite as a cathode material for Na-ion batteries

PRAVIN DIDWAL, RAKESH, \*박찬진

Pravin. Didwal, Rakesh. Verma, \*Chan-Jin. Park

*전남대학교.*

PII-6-53

3D Graphene-Ni Foam as an Advanced Electrode for High-Performance Nonaqueous Redox Flow Batteries

이규빈, \*김기재

kyubin. lee, \*Ki Jae. Kim

*서울과학기술대학교.*

PII-6-54

The effect of morphological factor of carbon materials on electrochemical performance of on  $\text{VO}^{2+}/\text{VO}_2^+$  redox reaction for VRFB

수하르토 유스티안, 안용건, 안연주, 김기재

Yustian. Suharto, YONG KEON. AHN, Yeonjoo. Ahn, Ki Jae. Kim

*서울과학기술대학교.*

PII-6-55

소듐 이온 전지용 양극재: P3 구조의 층상계 철-망간 산화물

임신권, 권미숙, \*이규태

Shin Gwon. Lim, Mi-Sook. Kwon, \*Kyu Tae. Lee

*서울대학교공과대학.*

PII-6-56

Study on cycling performance of lithium-oxygen battery assembled composite gel polymer electrolyte based on poly(styrene-co-methyl methacrylate) copolymer

손혜빈, 문용복, 우현식, 서사무엘<sup>1</sup>, 권은지<sup>1</sup>, 이호택<sup>1</sup>, \*김동원

Hye Been. Son, Yong-Bok. Moon, Hyun Sik. Woo, Samuel. Seo<sup>1</sup>, Eunji. Kwon<sup>1</sup>, Ho-Taek. Lee<sup>1</sup>, \*Dong-Won. Kim

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PII-6-57

Poly( $\epsilon$ -caprolactone)-based solid polymer electrolytes for all-solid-state lithium batteries

서예린, 정윤채, 박명수, \*김동원

YERIN. SEO, Yun-Chae. Jung, Myung-Soo. Park, \*Dong-Won. Kim

*한양대학교.*

PII-6-58

Pre-clustering treatment to modify microstructure of cathode electrode composite microstructure in all-solid-state batteries using sulfide based solid electrolyte

윤인상, 최선호, 손진오, \*신동욱

Insang. Yoon, Sunho. Choi, Jinoh. Son, \*Dongwook. Shin

*한양대학교.*

PII-6-59

Characteristics of Al anode and electrolyte interface of rechargeable aluminum-ion battery

이단비, 고희호, 오영호, \*이기백, \*탁용석

Danbi. Lee, HYUNG HO. GO, young-ho. oh, \*Gibaek. Lee, \*Yongsug. Tak

*인하대학교.*

PII-6-60

Electrochemical behaviors of metal current collectors of rechargeable aluminum-ion batteries **충방전이 가능한**

알루미늄 이온 배터리 금속 집전체의 전기화학적 특성

오영호, 고희호, 이단비, 이기백, \*탁용석

Youngho. Oh, Hyungho. Go, Danbi. Lee, Gibaek. Lee, \*Yongsug. Tak

*인하대학교.*

PII-6-61

소듐 이온 전지용 양극재: 저온 안정한 P2 층상계 망간 산화물

권미숙, 임신권, 김현기, 양홍선, \*이규태

Mi-Sook. Kwon, Shin Gwon. Lim, Hyeonggi. Kim, Hongsun. Yang, \*Kyu Tae. Lee

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PII-6-62

Computational analysis of effects of contact resistance on performance of vanadium redox flow stack

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Soowhan. Kim, Seunghun. Jung<sup>1</sup>

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PII-6-63

Nano-structured Cu<sub>2</sub>O materials as cathode for rechargeable Li-SO<sub>2</sub> battery

서현정, 곽경환, 정구진<sup>1</sup>, \*김영준<sup>2</sup>

Hyun Jung. Suh, Kyung-Hwan. Kwak, Goojin. Jeong<sup>1</sup>, \*Young-Jun. Kim<sup>2</sup>

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PII-6-64

티타늄 화합물을 이용한 마그네슘 이차전지용 Mg 음극 표면에서의 반응성 향상 The improvement for reaction kinetic on Mg anode by titanium complex for rechargeable Mg battery

\*우상길, 임시현, 유시재, 조우석, 한영규<sup>1</sup>, 임태은<sup>2</sup>, 유지상

\*Sang-Gil. Woo, Si Hyoun. Lim, Si-Jae. Yu, Woosuk. Cho, Young-Kyu. Han<sup>1</sup>, Taeun. Yim<sup>2</sup>, Ji-Sang. Yu

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PII-6-65

Amino Functionalized Multi-walled Carbon Nanotube as Artificial Solid-Electrolyte Interphase for Lithium Metal Anode

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PII-6-66

Dependence Electrochemical Properties of Organosulfide Electrolyte System on the Lithium-sulfur Batteries

박선민

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PII-6-67

수용액계 아연 이온 전지용 Zinc Hexacyanoferrate 양극의 전기화학적 특성에 미치는 전해질 농도의 영향

\*김두열, 이창희, 정순기

\*Duyeol. Kim, Changhee. Lee, Soon-Ki. Jeong

*순천향대학교.*

PII-6-68

리튬/나트륨 이차전지용  $Sb_2Te_3$  나노복합체의 전기화학적 특성 연구

남기훈, \*박철민

Gi-Hun. Nam, \*Cheol-Min. Park

*금오공과대학교.*

PII-6-69

나트륨이차전지용 주석-텔루라이드 화합물의 전기화학적 반응메커니즘 조사

박아람, 남기훈, \*박철민

Ah-Ram. Park, Gi-Hun. Nam, \*Cheol-Min. Park

*금오공과대학교.*

PII-6-70

SnS/SnS<sub>2</sub> Nanorod as a Binder-Free and Carbon-Free Anode Material for Na-ion Batteries

이호인, 김태희, 신재욱, 문정호, 이용주, \*조은애

Lee. Hoin, Kim. Tae-Hee, Shin. JaeWook, Moon. Jeongho, Lee. YongJu, \*Cho. EunAe

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PII-6-71

리튬 이차전지용 비정질 실리카-금속실리사이드-탄소 나노복합체 음극 소재의 전기화학적 특성 연구

이승수, \*박철민

Lee. Seung-Su, \*Park. Cheol-Min

*금오공과대학교.*

PII-6-72

리튬이차전지용 이차원 층상구조 SnSe<sub>x</sub> 화합물 음극소재의 반응메커니즘 및 전기화학적 특성연구

이동훈, 이승수, \*박철민

Dong-Hun. Lee, Seung-Su. Lee, \*Cheol-Min. Park

*금오공과대학교.*

PII-6-73

The Electrochemical Characteristics of poly-pyrrole Coated Na<sub>1+x</sub>MnFe(CN)<sub>6</sub> as a Cathode Material for Na-ion Batteries

박아람, \*김점수

Park. A Ram, \*Jeom-Soo. Kim

*동아대학교.*

PII-6-74

Improvement of capacity of lithium-sulfur battery by dual cathode structure as a polysulfide absorbent

김진원, 전해승, 이재광, 김희진, \*이재영

Jin Won. Kim, Haesong. Jeon, Jae Kwang. Lee, Heejin. Kim, \*Jaeyoung. Lee

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