

Jong-Soo Lee

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EDUCATIONS

- ◆ **Ph. D** : Department of Metallurgical Engineering, Chonbuk National University, Jeollabuk-do, South Korea
Feb. 1999, *Advisor : Prof. Kee-Do Woo*
- ◆ **M. S** : Department of Metallurgical Engineering, Chonbuk National University, Jeollabuk-do, South Korea
Feb. 1996, *Advisor : Prof. Kee-Do Woo*
- ◆ **B. S** : Department of Metallurgical Engineering, Chonbuk National University, Jeollabuk-do, South Korea
Feb. 1994

PROFESIONAL EXPERIENCES

- ◆ 2007. 11 - present : Senior Research Technologist, Department of Chemistry, The University of Chicago
Chicago, IL, USA
- ◆ 2006.11 - 2007. 11 : Postdoctoral Researcher, The Molecular Foundry, Lawrence Berkeley National Lab.,
Berkeley, USA
- ◆ 2004. 12 - 2006. 11 : Postdoctoral Researcher, Dept. Chem. Eng & Mater. Sci., University of California, Davis, USA
- ◆ 2004. 07 - 2004. 11 : Senior Research Scientist, Materials Research Center, Luxpialed. com, South Korea
- ◆ 2001. 08 - 2004. 06 : Research Assistant Professor, Dept. Electrical Eng., Korea University, South Korea
- ◆ 1999.05 - 2001. 07 : Military Service, Korea Army
- ◆ 1996.05 – 1999.05 : Research Assistant, Electron Microscope Lab., Chonbuk National University, South Korea

TEACHING EXPERIENCES

- ◆ 2002. 09 - 2002. 12 : Part-Time Lecturer, Dept. of Electrical Eng., Korea University, South Korea
“Characteristics of Micro Device”, Graduate School (3hrs/week)
- ◆ 2003.03 - 2003. 08 : Part-Time Lecturer, Dept. of Electrical Eng., Korea University, South Korea
“Introduction to Micro Device”, Graduate School (3hrs/week)
- ◆ 2003.09 - 2003. 12 : Part-Time Lecturer, Dept. of Electrical Eng., Korea University, South Korea
“Characteristics in New Materials”, Graduate School (3hrs/week)
- ◆ 1998.03 – 1998. 08 : Part-Time Lecturer, Dept. of Material Eng., Kunsan National University, South Korea
“Welding Engineering”, *“Advanced Engineering Mathematics I”*, Undergraduate School (12hrs/week)
- ◆ 1998.09 – 1999. 02 : Part-Time Lecturer, Dept. of Material Eng., Kunsan National University, South Korea
“Advanced Engineering Mathematics II”, Undergraduate School (3hrs/week)

RESEARCH INTERESTS

Fields related to Materials Science, Inorganic Chemistry, Physics, Electrical Engineering and applications of nanomaterials.

I. Synthesis and self-assembly of metal, semiconductor, magnetic, and multifunctional nanocrystals:

- Solution phase synthesis and Surface engineering of nanocrystals/nanowires with inorganic molecular

capping ligands

II. Semiconductor nanowires:

- Gas phase synthesis using thermal CVD method, solution phase synthesis of single crystal nanowires with controllable morphology (nanowires, nanobelts, core-shell, tetrapods, hyper-branched), coaxial core-shell nanowires, nanorings, and doping.
- Assembly and in-situ nanobridge of one-dimensional nanostructures combined with conventional semiconductor process.

III. Design and Energy-related applications of nanomaterials:

- Understanding of charge, heat, and ionic transport in nanowires and nanocrystal solids for electronic, thermoelectronic, optoelectronic devices and solid oxide fuel cells (SOFC).
- Field-effect Transistor/Gas sensors based on semiconductor nanowires and nanocrystal arrays.
- Thermoelectric device for the energy conversion and chip cooling using nanoparticles and nanowires.
- Optoelectronic devices (e.g., high efficient photoconductivity and photovoltaic devices) using inorganic capped nanocrystals.
- Development of Light Emitting Devices using nanophosphors

V. Technical skills :

- Synthesis of Nanomaterials : Colloidal method, Thermal CVD, Sol-gel method.
- Analytical techniques : SEM, TEM, XRD, FT-IR, TGA, DSC, PL, Absorption spectroscopy Impedance analyzer (Novocontrol Alpha-AN, HP4192A), etc.
- Charge Transport : Field-effect transistor, solar cell, thermoelectric device, Light emitting diode,
Low temperature measurement.
- Magnetic properties : Magnetoresistance measurement using PPMS.
- Metal deposition : E-beam evaporator, Thermal evaporator, Atomic layer deposition(ALD) etc.
- Device Fabrication : Photo-lithography, E-beam lithography, Mask design with Auto CAD,
Clean room works.
- Programming for auto controlling and interfacing (GPIB or IEEE-488, RS232) of laboratory instruments with Labview Program.

SERVICE TO THE SCIENTIFIC COMMUNITY

Journal reviewer: J. Am. Chem. Soc, Nano. Lett., Langmuir, etc.

AFFILIATIONS

- ◆ Member of the American Electrochemical Society (ECS)
- ◆ Member of Materials Research Society (MRS)
- ◆ Member of the Korean Physics Society

HONORS AND AWARDS

- ◆ Nov. 8, 1999 : **Prize for outstanding Paper**, Korean Foundrymen's Society
- ◆ **Co-Principle Investigator (Aug. 2002 ~ Jul. 2005)**
The Basic Research Program supported by KOSEF (Korea Science & Engineering Foundation),
“ The study of optoelectronic properties of Semiconductor nanowires”

◆ **Postdoctoral scholarship (Nov. 2004 ~ Nov. 2005)**

The Korea Research Foundation Grant funded by Korea government,
“The study on the oxygen ionic conduction in one-dimensional metal oxide nanowires”

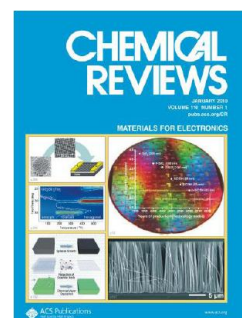
◆ **Principle Investigator (JAN. 2009 ~ JUN. 2010)**

User project, Center for Nanoscale Materials, Argonne National Laboratory
“High-resolution SEM and EDX studies of nanoparticle superlattices and superlattice heterostructures”

PUBLICATIONS (Total citation :>1050, H-index : 16)

1) Refereed Journals;

39. *Metal-free Inorganic Ligands for Colloidal Nanocrystals: S^{2-} , HS^- , Se^{2-} , HSe^- , Te^{2-} , HTe^- , TeS_3^{2-} , OH^- and NH_2^- as Surface Ligands*
Angshuman Nag, Maksym V. Kovalenko, **Jong-Soo Lee**, Wenyong Liu, Boris Spokoyny, Dmitri V. Talapin
J. Am. Chem. Soc. Vol. 133, 2011, 10612–10620
38. *Band-like transport, high electron mobility and high photoconductivity in all-inorganic nanocrystal arrays.*
Jong-Soo Lee, Maksym V. Kovalenko, Jing Huang, Dae Sung Chung, Dmitri V. Talapin
Nature Nanotechnology, Vol.6. No.6, 2011, 348-352
Highlighted in Chemical & Engineering News (C&EN), 89(19), May 09, 2011
In the news; Argonne Press Release, Nanowerk, PhysOrg, R&D Magazine, SMT Online, Solar Magazine, ZeitNews
37. *Expanding chemical versatility of colloidal nanocrystals with molecular metal chalcogenide ligands.*
Maksym V. Kovalenko, Maryna I. Bodnarchuk, Jana Zaumseil, **Jong-Soo Lee**, Dmitri V. Talapin
J. Am. Chem. Soc., Vol. 132 (29), 2010, 10085-10092
36. *Semiconductor Nanocrystals Functionalized with Metal Chalcogenide Complexes for Solution-Processed Thermoelectrics.*
Maksym V. Kovalenko, Boris Spokoyny, **Jong-Soo Lee**, Marcus Scheele, Andrew Weber, Susanthri Perera, Daniel Landry, Dmitri V. Talapin,
J. Am. Chem. Soc., Vol. 132, 2010, 6686-6695
35. *“Magnet-in-Semiconductor” FePt-PbS and FePt-PbSe Nanostructures; Magnetic properties, charge transport and magnetoresistance.*
Jong-Soo Lee, Maryna I. Bodnarchuk, Elena V. Shevchenko, Dmitri V. Talapin
J. Am. Chem. Soc., Vol.132, 2010, 6382-6391
34. *Prospects of Colloidal Nanocrystals for Electronic and Optoelectronic Applications*
Dmitri V. Talapin, **Jong-Soo Lee**, Maksym V. Kovalenko, Elena V. Shevchenko, *Chemical Reviews* (Invited review, Cover highlight),
Vol. 110 (1), 2010, 389-458.



33. *Anomalous High Oxygen-Ionic Conductivity of a CeO₂ nanostructure*
Sangtae Kim, **Jong Soo Lee**, Christoph Mitterbauer, Quentin M. Ramasse, Nigel D. Browning, Hee Jung Park, *Chem. Mater.*, Vol. 21 (7), 2009, 1182-1186
32. *Contact barriers in a single ZnO nanowire device*
Kanghyun Kim, Haeyong Kang, Hyeyoung Kim, **Jong-Soo Lee**, Sangtae Kim, Woun Kang, Gyu-Tae Kim, *Appl. Phys. A*, Vol. 94(2), 2009, 253
31. *Thermopower of PbSe nanocrystals quantum dot superlattices*
Robert Y. Wang, Joseph Feser, **Jong Soo Lee**, Dmitri Talapin, Rachel Segalman, Arun Majumdar, *Nanoletters*, Vol.8, No.8 (2008) 2283-2288
30. *A direct measurement of the local resistances in a ZnO-Tetrapod by means of Impedance Spectroscopy: The role of the junction in the overall resistance*
Junghwan Huh, Gyu-Tae Kim, **Jong Soo Lee**, Sangtae Kim
Appl. Phys. Lett., Vol. 93 (2008) 042111
29. *Au-PbS core-shell nanocrystals; Plasmonic Absorption Enhancement and Electrical Doping via intra-particle Charge Transfer*
Jong-Soo Lee, Elena V. Shevchenko, Dmitri V. Talapin,
J. Am. Chem. Soc., Vol. 130 (2008) 9673-9675
28. *Surface enthalpies of Nanophase ZnO with Different Morphologies*
Peng Zhang, Fen Xu, Alexandra Navrotsky, **Jong Soo Lee**, Sangtae Kim, Jun Liu
Chem. Mater., Vol.19 (2007) 5687-5693
27. *Photoresponses of ZnO nanobridge devices fabricated using a single-step thermal evaporation Method*
Jong Soo Lee, M. Saif Islam, and Sangtae Kim, *Sensors and Actuators B*, Vol.126 (2007) 73-77
26. *Synthesis of monodisperse SnTe nanocrystals: A new example of narrow gap semiconductor quantum dots for IR applications*
Maksym V. Kovalenko, Wolfgang Heiss, Elena V. Shevchenko, **Jong Soo Lee**, Harald Schwinghammer, A. Paul Alivisatos, Dmitri V. Talapin
J. Am. Chem. Soc., Vol. 129, No. 37 (2007) 11354-11355
[*Highlighted Nature Nanotechnology, 9 Sept. 2007*, Nanocrystals: Narrowing the Gap” by Ros Protman”
25. *Synthesis and characterization of Ce_xGd_xO_{2-δ} nanorods*
Jong Soo Lee*, Sangtae Kim, *J. Am. Ceram. Soc.*, Vol. 90, No. 2 (2007) 661-663
24. *Direct formation of catalyst-free ZnO nanobridge devices on an etched Si substrate using a thermal evaporation method*

- Jong Soo Lee**, M. Saif Islam, and Sangtae Kim,
Nano letters, Vol. 6, No. 7 (2006) 1487-1490
23. *Synthesis of single crystalline In₂O₃ nanowires and their photoluminescence characteristics*
B. Min, **J. S. Lee**, K. Keem, H. Kim, D. Y. Jeong, K. Cho, and S. Kim
Jpn. J. Appl. Phys. Vol. 45, No. 6A (2006) 4988-4990
22. *A direct evidence of electron accumulation in the grain boundary of yttria doped nanocrystalline zirconia ceramics*
Jong Soo Lee, Umberto Anselmi-Tamburini, Zuhair A. Munir, Sangtae Kim
Electrochemical and Solid State Letters, Vol. 9, No. 8 (2006) J34-J36
21. *Electrical properties of the ZnO nanowire transistor and its analysis with equivalent circuit model*
C. Y. Yim, D. Y. Jeon, K. H. Kim, G. T. Kim, Y. S. Woo, S. Roth, **J. S. Lee**, S. Kim
Journal of the Korean Physics Society, Vol. 48, No. 6 (2006) 1565-1569
20. *Amorphous lead oxide nanotubes filled partially with single-crystalline lead*
Jong-Soo Lee, Sung-Kyu Sim, Kyung-Hwan Kim, Kyoungah Cho, Sangsig Kim
Materials Science and Engineering B, Vol. 122 (2005) 85-89
19. *Sonochemical synthesis and photocurrent of HgTe nanoparticles*
Hyunsuk Kim, Kyoungah Cho, Hyunwoo Song, Jin-Hyoung Kim, Jun Woo Lee, **Jong Soo Lee**, Byungdon Min, Sung Hyun Kim, Sangsig Kim, *Key Engineering Materials*, Vol. 961 (2005) 277-279
18. *Photocurrent and photoluminescence characteristics of networked GaN nanowires*
Myungil Kang, **Jong-Soo Lee**, Sung-Kyu Sim, Hyun suk Kim, Byungdon Min, Kyoungah Cho, Gyu-Tae Kim, Man Young Sung, Sangsig Kim, and Hyon Soo Han
Jpn. J. Appl. Phys., Vol. 43, No. 10 (2004) 6868-6872
17. *Synthesis and characterization of nanocrystalline Mercury Telluride by sonochemical method*
H. Song, K. Cho, H. Kim, **J. S. Lee**, B. Min, H. S. Kim, S. W. Kim, T. Noh, And S. Kim
Journal of crystal growth, Vol. 269 (2004) 317-323
16. *Structural and optical properties of as-synthesized, Ga₂O₃-coated, and Al₂O₃-coated GaN nanowires*
Myungil Kang, **Jong Soo Lee**, Sung Kyu Sim, Byungdon Min, Kyungah Cho, Hyunsuk Kim, Man-Young Sung, Sangsig Kim, Se Ahn Song, and Moon-Sook Lee, *Thin solid films*, Vol. 466 (2004) 265-271
15. *Structural and optoelectronic properties of SnO₂ nanowires synthesized from ball-milled SnO₂ powders*
Jong Soo Lee, Sung Kyu Sim, Byungdon Min, Kyungah Cho, Soo Won Kim, Sangsig Kim
Journal of crystal growth, Vol. 267, No. 1-2 (2004) 145-149

14. *Photoresponse of sol-gel synthesized ZnO nanorods*
Seung-Eon Ahn, **Jong Soo Lee**, Hyun Suk Kim, Sang Sig Kim, Byung-Hyun Kang, Kang-Hyun Kim, Gyu-Tae Kim, *Applied Physics Letters*, Vol. 84, No. 24 (2004) 5022-5024
13. *Photocurrent in ZnO nanowires grown from Au electrodes*
Kihyun Keem, Hyunsuk Kim, Gyu-Tae Kim, **Jong Soo Lee**, Byungdon Min, Kyoungah Cho, Man-Young Sung, and Sangsig Kim, *Applied Physics letters*, Vol. 84, No.22 (2004) 4376-4378
12. *Transmuted Isotopes Doped in Neutron-Irradiated ZnO Thin Films*
Hyunsuk Kim, Kwangsue Park, Byungdon Min, **Jong Soo Lee**, Kyoungah Cho, Sangsig Kim, Hyon Soo Han, S. K. Hong, and T. Yao, *Nuclear Instruments and Methods in Physics Research B*, 217 (2004) 429-434
11. *Al₂O₃ nanotubes fabricated by wet etching of ZnO/Al₂O₃ core/shell nanofibers*
Joowon Hwang, Byungdon Min, **Jong Soo Lee**, Kihyun Keem, Kyoungah Cho, Man-Young Sung and Sangsig Kim, and Moon-Sook Lee
Advanced Materials, Vol.16, No.5 (2004) 422-425
10. *Photocurrent mechanism in a hybrid system of 1-thioglycerol-capped HgTe nanoparticles*
H. Kim, K. Cho, B. Min, **J. S. Lee**, K. T. Kim, S. Kim, S. H. Kim, T. Noh
Applied Physics letters, Vol.83, No. 22 (2003) 4619-4621
9. *Semiconductor nanowires surrounded by cylindrical Al₂O₃ shells*
B. Min, **J. S. Lee**, K. Cho, J. W. Hwang, H. Kim, M. Y. Sung, and S. Kim, J. Park, H. W. Seo, S. Y. Hae, M. S. Lee, S. O. Park, J. T. Moon,
Journal of electronic materials, Vol. 32, No. 11 (2003) 1344-1348
8. *Al₂O₃ nanotubes and nanorods fabricated by conformal coating and filling of carbon nanotubes with atomic layer deposition*
J. S. Lee, B. Min, K. Cho, S. Kim, J. Park, Y. T. Lee, N. S. Kim, M. S. Lee, S. O. Park, and J. T. Moon,
Journal of crystal growth, Vol. 254 (2003) 443-448
7. *ZnO nanomaterials synthesized from thermal evaporation of ball-milled ZnO Powders*
Jong-Soo Lee, Kwangsue Park, Mung-Il Kang, Il Woo Park, Soo-Won Kim, and Sangsig Kim
Journal of crystal growth, Vol. 254 (2003) 423-431
6. *Al₂O₃ coating of ZnO nanorods by atomic layer deposition*
B. D. Min, **J. S. Lee**, J. W. Hwang, K. H. Keem, M. I. Kang, K. Cho, M. Y. Sung, and S. Kim, M. S. Lee, S. O. Park, J. T. Moon, *Journal of crystal growth*, Vol. 252 (2003) 565-569

5. *Growth of zinc oxide nanowires by thermal evaporation on vicinal Si(100) substrate*

Jong-Soo Lee, Mung-Il Kang, Sangsig Kim, Min-Sang Lee, Young-Ki Lee

Journal of crystal growth, Vol. 249 (2003) 201-207

4. *Structural and optical properties of ZnO nanowires synthesized from ball-milled ZnO powders.*

Kwangsue Park, **Jong-Soo Lee**, Man-Young Sung, Sangsig Kim

Jpn. J. Appl. Phys., Vol. 41 (2002) 7317-7321

3. *Microstructural of epitaxial erbium-silicide films formed by solid phase reaction on vicinal Si(100) substrate*

Y. K. Lee, M. S. Lee, **J. S. Lee**, *Journal of crystal growth*, Vol. 244 (2002) 305-312

2. *Ga₂O₃ nanomaterials synthesized from ball-milled GaN powders*

Jong-Soo Lee, Kwangsue Park, Sahn Nahm, Soo-Won Kim, and Sangsig Kim

Journal of crystal growth, Vol. 244 (2002) 287-295

1. *Calorimetric investigation of precipitation kinetics in Al-Mg-Si-X(Cr,Be) alloys*

K.D.Woo, **J.S.Lee**, S.W.Kim, *Metals and Materials*, Vol. 5, No. 4 (1999) 363-368

PRESENTATIONS

21. *High Electron Mobility and Photoconductivity in CdSe and CdSe/CdS Nanocrystal Arrays Bridged with Molecular Metal Chalcogenide Ligands.*

Jong-Soo Lee, Maksym V Kovalenko, Jing Huang, Daesung Chung and Dmitri V Talapin

2011 MRS Spring meeting, San Francisco, CA, Apr. 26- 29, 2011

20. *Conductivity, doping and carrier mobility in arrays of semiconductor nanocrystals*

Jong-Soo Lee, Maksym Kovalenko, Jing Huang, Chengyang Jiang and Dmitri V. Talapin,

2010 MRS Spring meeting, San Francisco, CA, Apr. 5- 9, 2010

19. *Colloidal nanocrystals as prospective materials for electronic, thermoelectronic and photovoltaic applications.*

Dmitri V. Talapin, Maksym Kovalenko, **Jong-Soo Lee**, Boris Spokoyny and Eric Wong

2010 MRS Spring meeting, San Francisco, CA, Apr. 6- 8, 2010

18. *Tailoring electronic properties of nanocrystal solids by chemical design of nanocrystals and surface ligands.*

Dmitri V. Talapin, Maksym Kovalenko, and **Jong-Soo Lee**

2009 MRS fall meeting, Hynes Convention Center and Sheraton Boston Hotel, Boston, November 30-
December 4, 2009

17. *Assembly and conductivity of nanocrystal solids*

Dmitri V. Talapin, Maksym Kovalenko, Elena Shevchenko, and **Jong-Soo Lee**

2008 MRS fall meeting, Hynes Convention Center and Sheraton Boston Hotel, Boston, December 2-4, 2008,

16. *Thermopower and Electrical Conductivity of PbSe Nanocrystal Thin Films*
Robert Wang, Joseph Feser, **Jong-Soo Lee**, Dmitri Talapin, Rachel Segalman, Arun Majumdar
2008 APS March Meeting, March 10–14, 2008; New Orleans, Louisiana
15. *Self-Assembly and Conductivity of Nanocrystal Solids*
Dmitri V. Talapin, Elena Shevchenko, Maksym Kovalenko, **Jong-Soo Lee**
2007 MRS fall meeting, Hynes Convention Center and Sheraton Boston Hotel, Boston, Nov. 27-29, 2007
14. *Local electronic property of ZnO Tetrapods*
Jong Soo Lee, Junghwan Huh, Gyu Tae kim, Shareghe Mehraeen, Nigel Browning and Sangtae Kim, 2007
MRS spring meeting, San Fransisco, CA, Apr. 10- 12, 2007
13. *Synthesis, Characterization and Electrical property of Rich Three-dimensional nanostructured of CeO₂ nanowires.*
Jong Soo Lee, Christoph Mitterbauer, Nigel Browning and Sangtae Kim
2007 MRS spring meeting, San Fransisco, CA, Apr. 10- 12, 2007
12. *Charge Transport in Semiconductor Nanocrystal Solids*
Dmitri Talapin, Elena Schevchenko, **Jong Soo Lee**, Jeffrey Urban, David Mitzi, Christopher Murray, 2007
APS March Meeting, March 5-9, Denver, Colorado
11. *In-situ and electron tomography studies of Tetrapod-like ZnO nanorods*
C. Mitterbauer, S. Mehraeen, S. Kim, **J. S. Lee**, N. D. Browning
The 16th International Microscopy Congress, Septemver. 3~8, 2006, Sapporo, Japan
10. *Electron Tomography of ZnO Nanoscale Tetrapods*
S. Mehraeen, S. Kim, **J. S. Lee**, J. E. Evans, and N. D. Browning
Microscopy & Microanalysis 2006 meeting, Festival Hall at Navypier, Chicago, Illinois, July 30-August 3, 2006
9. *Electron accumulation in the grain boundary of Yittria doped nanocrystalline zirconia ceramics: Experimental evidences*
Jong Soo Lee, U. Anselmi-Tamburini and Z. Munir, Sangtae Kim
2006 E-MRS spring meeting, Acropolis congress center, May 29-June 2, 2006
8. *Catalyst-Free ZnO nanobridges: Synthesis and Characterization*
Jong Soo Lee, M. Saif Islam, and Sangtae Kim
2006 E-MRS spring meeting, Acropolis congress center, May 29-June 2, 2006
7. *Electron accumulation in the grain boundary of Yittria doped nanocrystalline zirconia*

Ceramics :Experimental evidence

Jong Soo Lee, U. Anselmi-Tamburini and Z. Munir, Sangtae Kim,

209th Meeting of the electrochemical society, Adams Mark Denver Hotel, Denver, Colorado, May 7-12, 2006

6. *Selective lateral growth and electrical properties of ZnO nanowires between two isolated electrodes.*

Jong Soo Lee, M. Saif Islam, and Sangtae Kim

2006 MRS spring meeting, San Fransisco, CA, Apr. 17- 21, 2006

5. *Grain boundary resistivity of nanograined solid electrolytes prepared spark plasma sintering*

Jong Soo Lee, U. Anselmi-Tamburini, Z. Munir, S. Kim

15th International Conference on Solid State Ionics

Baden-Baden Conference Center in Germany, July 17-22, 2005

4. *Photocurrent of an individual ZnO nanorods synthesized by sol-gel route on a pulse laser deposited ZnO film,*

Seung Eon Ahn, Gyu Tae Kim, **Jong Soo Lee**, Hyunsuk kim, Sangsig Kim, Chang Hyun Bae, Seung Min Park, Jeong Sook Ha.

2004 MRS Fall Meeting, Hynes Convention Center and Sheraton Boston Hotel,

Boston, MA, Nov. 29 ~ Dec. 3, 2004

3. *Photocurrent mechanism in a hybrid system of 1-thioglycerol and HgTe quantum dots*

Hyunsuk Kim, Kyoungah Cho, Byungdon Min, **Jong Soo Lee** and Sangsig Kim

2003 MRS Fall Meeting, Hynes Convention Center and Sheraton Boston Hotel,

Boston, MA, December 1-5, 2003

2. *Synthesis and application of mercury telluride nanoparticles*

H. Kim, K. Cho, H. W. Song, J. H. Kim, J. W. Lee, **J. S. Lee**, B. Min, S. Kim

International woman's conference on BIEN technology, Paichai University,

Daejeon, Korea, November 13-16, 2003

1. *Effect of retrogression and reaging on bake hardenability in Al-Mg-Si-(Cr,Be) alloys*

K. D. Woo, **J. S. Lee** and S. W. Kim

Light materials for transportation systems (LiMAT-2001), Busan Exhibition & Convention Center(BEXCO),

Pusan, Korea, May 6 ~10, 2001

PATENTS

1) Korea Patents

1. *Method for coating alumina thin film by using a Atomic layer deposition on the surface of nanowire and nanotube*

Sangsig Kim, Byungdon Min, Joowon Hwang, **Jong Soo Lee**, Kyoungah Cho

- Patent number : 10-0709112-0000(2007. 04.12)

2. *Manufacturing method of nanoelectronic device of cylindrical gate and nanoelectronic device*

Sangsig Kim, Byungdon Min, Joowon Hwang, Hyunsuk Kim, **Jong Soo Lee**, Kyoungah Cho

- Patent number : 10-0544324-0000(2006.1.11)

3. *Method for manufacturing nanotube*

Sangsig Kim, Byungdon Min, Joowon Hwang, **Jong Soo Lee**, Kyoungah Cho

- Patent number : 10-0604231-0000(2006. 7. 18)

4. *Semiconductor light emitting device having nano-needle and method for manufacturing the same*

Jong Soo Lee, Min Sang Lee, Young Ki Lee

- Patent number :10-0531073-0000(2005. 11.18)

2) USA Patent

1. *Semiconductor Light-Emitting Device and Method of Manufacturing the same*

Jong Soo Lee, Min Sang Lee, Young Ki Lee, USA patent Number : 7294519, 2007

2. *Materials and Methods for the Preparation of Nanocomposites.*

Tapin, Dmitri V., Kovalenko, Maksym V., **Lee, Jong-Soo**, Jiang, Chengyang

Pub No. : WO/2010/124216, Application No.: PCT/US2010/032246

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