Curriculum Vitae

Nam-Goo Kang

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Department of Chemistry,
University of Tennessee,
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Knoxville, TN 37996, USA
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PERSONAL

Date of Birth: September 27th, 1973
Place of Birth: Seoul, South Korea
Citizenship: South Korea
Marital Status: Married
Broad Discipline: Polymer Science and Engineering
Specialization: Synthesis of Functional Polymers by living anionic polymerization

EDUCATIONAL QUALIFICATIONS

Ph.D. (March 2nd, 2006 ~ August 18th, 2010)
Department of Materials Science and Engineering
Gwangju Institute of Science and Technology (GIST)
Thesis: **Random and Block Copolymerization of Vinyl Monomers Containing Carbazole, Iridium (III) Complex, and Oxadiazole Moiety and Their Electroluminescent Property**
Advisor: Prof. Jae-Suk Lee

M.Sc. (August 28, 2000 ~ August 20th, 2002)
Department of Materials Science and Engineering
Gwangju Institute of Science and Technology (GIST)
Thesis: **Anionic Polymerization of 2-(4-Vinylphenyl)pyridine**
Advisor: Prof. Jae-Suk Lee

B.Sc. (March 2nd, 1992 ~ February 26th, 2000)
Department of Polymer Science & Fine Chemical Engineering
Chonnam National University, Gwangju, Republic of Korea

PROFESSIONAL EXPERIENCE

Research Assistant Professor and Facilities Director of Polymer Characterization Lab (PCL) (October 1st, 2012~ present)
Department of Chemistry,
University of Tennessee,
Research topic: **1) Synthesis and characterization of functional polymers for organic electronics, water purifications, thermo elastomers, and carbon nanofibers 2) Synthesis of well-defined polymers with linear, block, star-shape, multi-graft, branched structures by living polymerization. 3) Management of PCL**
Advisor: Prof. Jimmy Mays

Post-Doctoral Research Associate. (October 3rd, 2010 ~ September 29th, 2012)
Polymer Science Program, Department of Chemistry,
University of Massachusetts Lowell
Research topic: **1) Synthesis of Well-defined Poly(isobutylene)-based Polyurethane Thermoplastic Elastomers by Living Cationic Polymerization 2) Synthesis of Fullerene (C_{60})-based Conjugate Materials and Water-soluble C_{60} Derivatives for Two Photon Absorption and Photodynamic Therapy as a Photosensitizer**
Advisor: Prof. Rudolf Faust and Long Y. Chiang

Teaching Assistant (March 2nd, 2008 ~ June 16th, 2008)
Gwangju Instituted of Science and Technology (GIST)
Dept. of Materials Science and Engineering
Course: Polymer Synthesis

Teaching Assistant (September 1st, 2007 ~ December 21st, 2007)
Gwangju Instituted of Science and Technology (GIST)
Dept. of Materials Science and Engineering
Course: Polymer Characterization

Researcher (September 2nd, 2006 ~ December 22nd, 2006)
Gwangju Instituted of Science and Technology (GIST) in South Korea
GIST Technology Institute (GTI)
Project: Patent Roadmap of Organic Light Emitting Polymeric Materials for OLED
Responsibility: **Writing Patent Roadmap about Organic Lighting Emitting Diode Based on Polymeric Materials**

Researcher (July 1st, 2004 ~ February 28th, 2006)
Gwangju Instituted of Science and Technology (GIST) in South Korea
Dept. of Materials Science and Engineering, Functional Polymer Synthesis Lab.
Advisor: Prof. Jae-Suk Lee
Research topic: **1) Synthesis and Characterization of Blue Emitting Materials Based on Iridium Metal complex and carbazole 2) Synthesis of well-controlled phosphorescent emitting polymers by living anionic Polymers for Easy Fabricating OLED**

Research Scientist (August 1st, 2002 ~ July 1st, 2004)
LG Chemical Company (LG Chem) in South Korea
Performance polymers Research and Development (Petrol Chemical and Polymers Research institute)
Research topic: **1) Emulsion Polymerization, 2) Synthesis and Development of Acrylic Impact Modifier for Improving PVC Window Frames, 3) Charaterization and Measurement of Mechanical Properties**

RESEARCH INTEREST

1. Design and Synthesis of Various Functional Organic and Polymeric Materials

2. Living Anionic Polymerization: Design and Synthesis of Well-defined Polymers with Complicated Polymer Architectures such as Linear Block, Star, Grafting, and Cyclic Polymers

3. Control of Polymer Architectures and Morphologies for Improvement of Organic Electronics, Thermo Plastic Elastomer, and Nano Science

4. Carbon Materials: Fullerenes (C60) and Carbon Nano Tubes (CNT) for Carbon Nano Fibers and Organic Electronics

5. Development of Advanced Passive Polymer Membranes for Carbon Dioxide Separation Using Functional Polymers

6. Development of Advanced Organic Electronic Materials and Devices: Organic Light Emitting Diodes, Non-Volatile Memory Devices, and High Efficient Photovoltaic Cells

ACADEMIC AWARDS

Innovation Award
Graft Copolymers as Superelastomers, The University of Tennessee Research Foundation, University of Tennessee, Knoxville, USA, January 12th, 2016.

Dasan Scholarship
Gwangju Institute of Science and Technology (GIST), Gwangju, Republic of Korea, June 18th, 2008

Honorable Mention Poster Award
Living Anionic Polymerization of 2-(4-Vinylphenyl)Pyridine Containing an Amphiphilic Moiety, International Symposium on Advanced Macromolecules and Nano-materials with Precisely Designed Architectures (ISAMN '07), Hokkaido University, Sapporo, Japan, October 4th ~ 6th, 2007

Brain Korea 21 (BK21) Scholarship
Gwangju Institute of Science and Technology (GIST), Gwangju, Republic of Korea
September 1st, 2001 ~ August 22nd, 2002 and March 2nd, 2006 ~ August 18th, 2010

LIST OF PUBLICATIONS

1. Weiyu Wang, Andrew Goodwin, **Nam-Goo Kang**, Jimmy W. Mays,* Recent Advances in Thermoplastic Elastomers Based on Synthetic Polymers, ***Progress in Polymer Science***, **2016**, *in preparation*. ***Invited review paper***

2. Hongbo Feng, Mohammad Changez, Kunlun Hong, Jimmy W. Mays, **Nam-Goo Kang,*** Synthesis of Well-defined Poly(2-isopropenyl-2-oxazoline) via Living Anionic Polymerization, ***Journal of The American Chemical Society***, **2016**, *in preparation*.

3. Christopher M. Hurley, Mohammad Changez, **Nam-Goo Kang**, Jimmy W. Mays, Self-Assembly of the Amphiphilic Homopolymers Poly(4-hydroxystyrene) and Poly(4-bromophenyloxy(styrene), ***Polymer***, **2016**, *in preparation*.

4. Hongbo Feng, Tao Hong, Shannon Mahurin, De-en Jiang, Brian Long, Jimmy Mays, Alexei Sokolov, **Nam-Goo Kang,*** Tomonori Saito,***** Carbon Dioxide Separation Properties of Amidoxime-containing poly(1-trimethylsilyl-1-propyne) Membranes, ***Macromolecules***, **2016**, *in preparation*. *N.-G. Kang and T. Saito are co-corresponding author.*

5. A. Goodwin, K. M. Nelson, W. Wang, Y.-G. Yu, J.-S. Lee,* S. M. Mahurin, S. Dai, J. W. Mays, **N.-G. Kang,*** Anionic polymerization of heteroatom-containing 2-vinylpyridine by precisely tuning nucleophilicity and polyelectrolyte characteristics of the resulting polymers, ***Macromolecules***, **2016**, *Submitted*.

6. Ting Wu, Rupam Mukherjee, Olga S. Ovchinnikova, Liam Collins, Wei Qin, Qing Liu, Mahshid Ahmadi, Yu-Che Hsiao, Grant Christian Hanthorn, Wei Lu, Nam-Goo Kang, Jimmy W. Mays, Stephen Jesse, David Mandrus, Bin Hu* Interface-Dependent N-type and P-type semiconducting properties in hybrid perovskite single crystals through metal/ion interaction, ***Nature Communications***, **2015**, *Submitted*.

7. Maria Cecilia Evora, Xinyi Lu, Nitilaksha Hiremath, **Nam-Goo Kang**, Kunlun Hong, Roberto Uribe, Gajanan Bhat, Jimmy Mays, Effect of radiation grafting polymerization on structure and properties of carbon nanotube fibers, ***Applied Surface Science***, **2016**, *Submitted.*

8. L. Ren, **N.-G. Kang**, P. N. Shah, R. Faust, Synthesis and thermal properties of model thermoplastic polyurethanes containing MDI/Butanediol based monodisperse hard segments, ***Journal of Polymer Science Part A: Polymer Chemistry***, **2016**, *Submitted.*

9. Fei Fan, Weiyu Wang, Adam P. Holt, Hongbo Feng, David Uhrig, Xinyi Lu, Tao Hong, Yangyang Wang, **Nam-Goo Kang**, Jimmy Mays, Alexei P. Sokolov, ***Macromolecules***, **2016**, *Submitted*.

10. W. Wang, R. Schelgel, T. White, D. Voyloy, K. Willimson, A. Goodwin, E. B. Coughlin, S. Gido, M. Beiner, K. Hong, **N.-G. Kang,*** J. W. Mays,* High temperature thermoplastic elastomers synthesized by living anionic polymerization in hydrocarbon solvent at room temperature, ***Macromolecules***, **2016**, *49(7)*, 2646-2655. *N.-G. Kang and J. W. Mays are co-corresponding author.*

11. Dongwoo Wi,* Jonghyun Kim,* Hoyeol Lee,* **Nam-Goo Kang,*** Brian J. Ree, Jinseok Lee, Myung-Jin Kim, Jae-Suk Lee, Moonhor Ree, Finely tuned digital memory modes and performances in diblock copolymer devices by well-defined lamellar structure formation and orientation control, ***Journal of Materials Chemistry C***, **2016**, *4*, 2017-2027. *These four authors contributed equally to this work.

12. S. Cheng, A. P. Holt, H. Wang, F. Fan, V. Bocharova, M. Halie, T. Etampawala, B. T. White, T. Saito, **N.-G. Kang**, M. D. Dadmun, J. W. Mays, A. P. Sokolov, Unexpected molecular weight effect in polymer nanocomposites, ***Physical Review Letters***, **2016** *116,* 038302.

13. A. Goodwin, W. Wang, **N.-G. Kang**, Y. Wang, K. Hong, J. W. Mays, All-acrylic multigraft copolymers: Effect of side chain molecular weight and volume fraction on mechanical behavior, ***Industrial & Engineering Chemistry Research***, **2015**, *54(39)*, 9566-9576.

14. H. Sun, P. Lin, G. Liu, K. Ntetsikas, K. Misichronis, **N.-G. Kang**, J. Liu, A. Avgeropoulos, J. W. Mays, S.-Q. Wang, Failure behavior after stepwise uniaxial extension of entangled polymer melts, ***Journal of Rheology***, **2015**, *59(3)*, 751-767.

15. **N.-G. Kang**, K. Kokubo, S. Jeon, M. Wang, C.-L. Lee, T. Canteenwala, L.-S. Tan, L. Chiang, Synthesis and light-harvesting properties of geometrically hindered cis-tris(diphenylaminofluorene) as precursors to light-emitting devices, ***Molecules***, **2015**, *20(3)*, 4635-4654.

16. T. Wu, Y.-C. Hsiao, M. Li, **N.-G. Kang**, J. W. Mays, B. Hu, Dynamic coupling between electrode interface and donor/acceptor interface via charge dissociation in organic solar cells at device-operating condition, ***The Journal of Physical Chemistry C***, **2015**, *119(5)*, 2727-2732.

17. A. Goodwin, S. Bobade, **N.-G. Kang**, D. Baskaran, K. Hong, J. W. Mays, Poly(styrene-*graft*-hyperbranched polyglycidol): synthesis and solution behavior of a hyperbranched polyelectrolyte**, *RSC Adv*ances**, **2015**, *5*, 5611-5616.

18. W. Wang, W. Wang, H. Li, X. Lu, J. Chen, **N.-G. Kang**, Q. Zhang, J. W. Mays, Synthesis and characterization of graft copolymers poly(isoprene-g-styrene) of high molecular weight by a combination of anionic polymerization and emulsion polymerization, ***Industrial & Engineering Chemistry Research***, **2015**, *54(4)*, 1292-1300.

19. W. Wang, W. Wang, X. Lu, S. Bobade, J. Chen, **N.-G. Kang**, Q. Zhang, J. W. Mays, Synthesis and characterization of comb and centipede multigraft copolymers PnBA-g-PS with high molecular weight using miniemulsion polymerization, ***Macromolecules***, **2014**, *47*, 7284-7295.

20. **N.-G. Kang**, M. Changez, M.-J. Kim, J.-S. Lee, Effect of biphenyl spacers on the anionic polymerization of 2-(4'-vinylbiphenyl-4-yl)pyridine, ***Macromolecules***, **2014**, *47*, 6706-6714.

21. B.-G. Kang, S. Song, B. Cho, **N.-G. Kang**, M.-J. Kim, T. Lee, J.-S. Lee, Facile anionic synthesis of well-defined block copolymers with pendent triphenylamine and ethynylpyridine for nonvolatile memory device application with high performances, ***Journal of Polymer Science Part A: Polymer Chemistry***, **2014**, *52*, 2625-2632.

22. J.-P. Lee, H.-D. Koh, W.-J. Shin, **N.-G. Kang**, S.-P. Park, J.-S. Lee, CdS/C_{60} binary nanocomposite films prepared via phase transition of PS-*b*-P2VP block copolymer, ***Journal of Colloid and Interface Science***, **2014**, *417*, 166-170.

23. M. Changez, **N.-G. Kang**, D. W. Kim, J.-S. Lee, Hollow Flower Micelles from a Diblock Copolymer, ***Nanoscale* 2013**, *5*, 11554-11560. *This paper has been selected as a "**Hot Article**".*

24. **N.-G. Kang**, Y.-H. Hur, M. Changez, B.-G. Kang, Y.-G. Yu, J.-S. Lee, Effect of substituted groups on the living anionic polymerization of 2-vinylcarbazole derivatives, ***Polymer* 2013**, *54*, 5615-5625.

25. B.-G. Kang, Y.-G. Yu, **N.-G. Kang**, J.-S. Lee, Synthetic Pathway to Functional Block Copolymers with Pendent Triphenylamine and Ethynylpyridine: Effect of Countercation on Anionic Polymerization Behavior, ***Journal of Polymer Science Part A: Polymer Chemistry***, **2013**, *51*, 4233-4239.

26. Y.-H. Hur,* **N.-G. Kang**,* B.-G. Kang, Y.-G. Yu, M. Changez, J.-S. Lee, Novel Amphiphilic Homopolymers Containing *meta*- and *para*-Pyridine Moieties with Living Characteristics and Their Self-assembly, ***Journal of Polymer Science Part A: Polymer Chemistry***, **2013**, *51*, 3458-3469. *These two authors contributed equally to this work.

27. B.-G. Kang, H. Kang, **N.-G. Kang**, C.-L. Lee, K. Lee, J.-S. Lee, Thermally Cross-linkable Hole Transporting Polymer Synthesized by Living Anionic Polymerization for Effective Electron Blocking and Reduction of Exciton Quenching in Multilayer Polymer Light Emitting Diodes, ***Polymer Chemistry***, **2013**, *4*, 969-977.

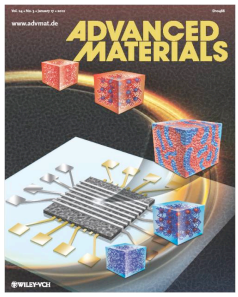
28. **N.-G. Kang**, B.-G. Kang, Y.-G. Yu, M. Changez, J.-S. Lee, Well-Defined Ambipolar Block Copolymers Containing Monophosphorescent Dye, ***ACS Macro Letters***, **2012**, *1*, 840-844.

29. M. Changez, H.-D. Koh, **N.-G. Kang**, J.-G. Kim, Y.-J. Kim, S. Samal, J.-S. Lee, Molecular Level Ordering in Poly(2-vinylpyridine), ***Advanced Materials***, **2012**, *24*, 3253-3257.

30. M. Changez,* **N.-G. Kang**,* J.-S. Lee, Uni-molecular Hollow Micelles from Amphiphilic Homopolymer Poly(2-(4-vinylphenyl)pyridine), ***Small***, **2012**, *8*, 1173-1179. *These two authors contributed equally to this work.

31. S. G. Hahm,* **N.-G. Kang**,* W. Kwon, K. Kim, Y.-G. Ko, S. Ahn, B.-G. Kang, T. Chang, J.-S. Lee, M. Ree, Programmable Bipolar and Unipolar Nonvolatile Memory Devices Based on Poly(2-(*N*-carbazoly)ethyl methacrylate) End-Capped with Fullerene, ***Advanced Materials***, **2012**, *24*, 1062-1066. *These two authors contributed equally to this work.

32. **N.-G. Kang**,* B. Cho,* B.-G. Kang, S. Song, T. Lee, J.-S. Lee, Structural and Electrical Characterization of a Block Copolymer-Based Unipolar Nonvolatile Memory Device, ***Advanced Materials***, **2012**, *24*, 385-390. *These two authors contributed equally to this work. *It was selected as* ***Inside COVER picture article.*** *Introduced as research news at www.mt.co.kr, and www.asiatoday.co.kr*.



33. B.-G. Kang, **N.-G. Kang**, J.-S. Lee, Effect of Isomeric Pyridine Moieties in Ethynylstyrene Derivatives on Their Anionic Polymerization, ***Journal of Polymer Science Part A: Polymer Chemistry***, **2011**, *49*, 5199-5209.

34. B.-G. Kang, **N.-G. Kang**, J.-S. Lee, Living Anionic Polymerization of Styrene Derivatives Containing Triphenylamine Moieties through Introduction of Protecting Group, ***Macromolecules***, **2010**, *43*, 8400-8408.

35. M. Changez, **N.-G. Kang**, H.-D. Koh, J.-S. Lee, Effect of Solvent Composition on Transformation of Micelles to Vesicles of Rod−Coil Poly(*n*-hexyl isocyanate-*block*-2-vinylpyridine) Diblock Copolymers, ***Langmuir***, **2010**, *26*, 9981-9985.

36. M. Changez, **N.-G. Kang**, Chi H. Lee, J.-S. Lee, Reversible and pH-Sensitive Vesicles from Amphiphilic Homopolymer Poly(2-(4-vinylphenyl)pyridine), ***Small***, **2010**, *6*,63-68.

37. J.-P. Lee, E.-U. Kim, H.-D. Koh, **N.-G. Kang**, G.-Y. Jung, J.-S. Lee, The Fabrication of Nanopatterns with Au Nanoparticles-Embedded Micelles via Nanoimprint Lithography, ***Nanotechnology***, **2009**, *20*, 365301 (6pp).

38. **N.-G. Kang**, B.-G. Kang, H.-D. Koh, M. Changez, J.-S. Lee, Block Copolymers Containing Pyridine Moieties: Precise Synthesis and Applications, ***Reactive & Functional Polymers***, **2009**, *69*, 470-479. *This paper has been selected as a "**Top 25 Hottest Articles from April to June 2009**".*

39. K. Lee, S.-H. Oh, **N.-G. Kang**, J.-S. Lee, H. Lee, G. Y. Jung, Nonaqueous Nanoscale Metal Transfer by Controlling the Stickiness of Organic Film, ***Langmuir***, **2008**, *24*, 8413-8416.

40. H.-D. Koh, **N.-G. Kang**, J.-S. Lee, Fabrication of an Open Au/Nanoporous Film by Water-in-Oil Emulsion-Induced Block Copolymer micelles, ***Langmuir***, **2007**, *23*, 12817-12820.

41. **N.-G. Kang**, M. Changez, J.-S. Lee, Living anionic Polymerization of 2-(4-vinylphenyl)pyridine containing amphiphilic moiety, ***Macromolecules***, **2007**, *40*, 8553-8559.

42. H.-D. Koh, **N.-G. Kang**, J.-S. Lee, Location Control of Au/CdS Nanoparticles in Block Copolymer Micelles, ***Langmuir***, **2007**, *23*, 11425-11429.

43. C.-Y. Lee, **N.-G. Kang**, Y.-S. Cho, J.-S. Lee, J.-J. Kim, Polymer electro phosphorescent device: comparison of phosphorescent dye doped and coordinated systems, ***Optical Materials***, **2002**, *21*, 119-123.

44. **N.-G. Kang**, M. S. Rahman, S. Samal, J.-S. Lee, Living polymerization and controlled block copolymers (리빙중합과 제어된 블록 공중합체의 합성), ***Polymer Science and Technology (고분자과학과 기술)***, **2005**, *16*, 777-798.

LIST OF PROCEEDING PAPER

45. **N.-G. Kang**, Y.-S. Cho, J.-H. Ahn, C.-L. Lee, J.-J. Kim and J.-S. Lee, Phosphorescent Copolymers of Ir-Bound 2-(4-Vinylphenyl)pyridine with *N*-Vinyl Carbazole, ***Polymer Preprints*** **2001**, *42*, 448-449.

LIST OF REGISTERED PATENTS

1. Jae-Suk Lee, **Nam-Goo Kang**, "Blue-luminous iridium complex, iridium complex monomer, phosphorescent polymer and organic electroluminescent device having the same (청색 발광 이리듐 착물, 이리듐 착물 단량체, 인광 고분자 및 이를 이용한 유기전계발광소자)", **PCT/KR2010/005218** (08.10.2010), **KR 10-1113313** (01.31.2012), **US 9,150,601** (10.06.2015).

2. Jae-Suk Lee, Takhee Lee, Jung-Pil Lee, **Nam-Goo Kang**, Byungjin Cho, "Functional block copolymer-nanoparticle composite and organic electronic device using the same (기능성 블록공중합체-나노입자 복합체 및 이를 이용한 유기전자소자)", **KR 10-1136878** (04.09.2012).

3. Jae-Suk Lee, **Nam-Goo Kang**, "Anionic polymerization method for styrene derivative containing pyridine as functional group", **US 8,110,641 (**02.07.2012).

4. Jae-Suk Lee, **Nam-Goo Kang**, "Synthesis of vinylphenylpyridine and living anionic polymerization (비닐-비페닐 피리딘 단량체 및 이를 이용한 중합체", **US 8,110,642** (02.07.2012), **KR 10-0778033** (11.14.2007), **PCT/KR2007/001631** (11.15.2007).

5. Jae-Suk Lee, Jong-Hoon Yeum, **Nam-Goo Kang**, "Anionic polymerization of functionalized styrene derivatives directly containing triphenylamine (트리페닐아민을 기능성 그룹으로 직접 함유한 스티렌유도체의 음이온 중합 방법)", **KR 10-1084762** (11.11.2011).

6. Jae-Suk Lee, **Nam-Goo Kang**, Hyo-jin Jeon, "Iridium complex, carbazole derivatives and copolymer having the same (이리듐 착체, 카바졸 유도체 및 이들을 가지는 공중합체)", **US 7,727,690 B2** (06.01.2010), **KR 10-0779009** (11.16.2007), **EP 1923385 B1** (05.27.2009), **JP 4781341** (07.15.2011).

7. Jae-Suk Lee, **Nam-Goo Kang**, "Carbazole derivative polymer containing fullerene, method of synthesizing the same, and nonvolatile memory device including the polymer", **KR 10-1022558** (03.08.2011).

8. Jae-Suk Lee, **Nam-Goo Kang**, Hyo-jin Jeon, Jin-Woo Kwan, Beom-Goo Kang, Hee-Soo Yoo, "Iridium complex having ligands and polymer using the iridium complex (리간드를 함유한 이리듐 착체 및 이를 이용한 유기 고분자)", **KR 10-0947699** (03.08.2010).

9. Jae-Suk Lee, Gun-Young Jung, Jung-Pil Lee, Eun-Uk Kim, **Nam-Goo Kang**, Haeng-Deog Koh, "Method of fabricating nanopattern embedding nanoparticles, and electronic device (나노 입자를 함유하는 나노 패턴의 제조방법 및 전자 소자)", **KR 10-1572069** (11.20.2015).

10. Youngmin Kim, Jae-Suk Lee, S. Samal, Takhee Lee, S. Acharaya, G. Yogendranath, Hyonwook Song, **Nam-Goo Kang**, Jung-Pil Lee, "Orgainc rectifier having fullerene Derivatives (플러렌 유도체를 구비하는 유기 정류기)", **KR 10-0873802** (12.11.2008).

11. Youngmin Kim, Jae-Suk Lee, S. Samal, Takhee Lee, S. Acharaya, G. Yogendranath, Hyonwook Song, **Nam-Goo Kang**, Jung-Pil Lee, "Fullerene derivatives (풀러렌 유도체)", **KR 10-0872957** (12.02.2008).

12. Jae-Suk Lee, Mohammad Changej, Haeng-Deog Koh, Shashadhar Samal, **Nam-Goo Kang**, Won-Jeong Shin, Young-Jea Kim, "Supramolecular structure having sub-nano scale ordering (유기 결정성 고분자)", **KR 10-0868442** (11.05.2008), **US 2014/0142250 A1** (05.22.2014).

13. Jae-Suk Lee, Haeng-Deog Koh, **Nam-Goo Kang**, Jung-Pil Lee, "Method of forming metal-block copolymer nanocomposites and method of controlling the same (금속-블록공중합체 나노복합체의 형성 방법 및 이의 제어방법)", **KR 10-0837046** (06.03.2008).

14. Jae-Suk Lee, Young-Sun Cho, Joo-Young Kim, **Nam-Goo Kang**, "Manufacturing process of nanocomposites using nanoparticles and copolymers (나노 입자와 고분자 물질을 이용한 나노 복합체 제조 방법)", **KR 10-0427725** (04.07.2004).

15. Jae-Suk Lee, Jun-Hwan Ahn, Young-Sun Cho, **Nam-Goo, Kang**, Hye-Kyong Lee, "Vinyl-phenyl pyridine monomers and polymers (비닐-페닐 피리딘 단량체와 이를 이용하여 제조한 고분자)", **U.S. 6,545,159** (04.08.2003) **KR 10-0376286** (03.04.2003).

LIST OF APPLIED PATENTS

1. Jimmy W. Mays, **Nam-Goo Kang**, "Low-cost synthesis of macromonomers", **preparation of US patent, in present.**

2. Jimmy W. Mays, **Nam-Goo Kang**, Qiuyu Zhang, Wenwen Wang, "Multigraft copolymer superelastomers by emulsion polymerization", PCT international patent application No. **PCT/US2015/036727** (06. 19. 2015).

LIST OF BOOK CHAPTER

1. Electrical Memory Materials and Devices, "CHAPTER 8: Non-Volatile Memory Properties of Donor-Acceptor Block Copolymers", **N.-G. Kang**, M.-J. Kim, J.-S. Lee, Chapter 8, Volume 2016-January, Issue 18, **2016**, Pages 256-294, RSC Polymer Chemistry Series, The Royal Society of Chemistry, Ed: Wen-Chang Chen.

2. Anionic Polymerization: Principle, Practice, Strength, Consequence and Applications, "Chapter 3.2 Graft and Comblike Polymers," A. Goodwin, **N.-G. Kang**, J. W. Mays, Chapter 3.2, **2015**, Pages 625-658, Springer Japan KK: Osaka, Japan, (2015), Eds: Nicos Hadjichristidis and Akira Hirao.

APPROVED RESEARCH PROPOSALS AND PROJECTS

In University of Tennessee Knoxville (UTK), Involving as a Research Assistant Professor

1. New Paradigms in Passive Polymer Membranes for Carbon Dioxide Separation, 01. 2014 – in Present, Department of Energy (DOE) and Oak Ridge National Laboratory (ORNL) in USA, in Collaboration with Prof. Alexei Sokolov (Governor's Chair Position & Professor at ORNL and UTK) and Dr. Tomonori Saito (Research Staff) Group

2. Improving Carbon Nanotube Fibers through Crosslinking and Densification, 01. 2013 – in Present, NASA Experimental Program to Stimulate Competitive Research (NASA EPSCoR) in USA, in Collaboration with Prof. Gajanan S. Bhat (Professor at UTK) and Dr. Amit Shyam (R & D Staff at ORNL) Group

3. Ultra-Sensory Condoms Based on New Superelastomer^{TM} Technology, 10. 2013 – in Present, Bill & Melinda Gates Foundation in USA

4. Superelastomers: New Thermoplastic Elastomers based on Multigraft Copolymers, 10. 2012 – 10. 2014, National Science Foundation-Partnerships For Innovation (NSF-PFI) Program in USA

5. Synthesis and Characterization of Complex Polymer Architectures Using Novel Hydrocarbon Soluble Anionic Initiators, 10. 2012 – 09. 2014, U.S. ARMY U.S. Army Research Office (ARO) in USA

In University of Massachusetts Lowell, Involving as a Post-Doctoral Research Associate

1. Synthesis of Fullerene (C60, C70, C84)-based Nanostructures, Used as the Materials of Nonlinear Optics (NLO) and the Photodynamic Therapy (PDT), 10. 2011 – 09. 2012, Air Force Office of Scientific Research (AFOSR), Collaboration with Dr. Loon-Seng Tan (Research Group Leader at Air Force Research Lab)

2. Synthesized and Characterized Thermoplastic Polyurethane with Controlled Dispersity of the Hard and Soft Segments, 10. 2010 – 09. 2011, Boston Scientific Corporation

In Gwangju Institute of Science and Technology (GIST), Involving as a Graduate Student

1. Program for integrated molecular system (PIMS): Synthesis of materials for integrated molecular systems, 01. 2007 – 09. 2010, Gwangji Institute of Science and Technology (GIST)

2. Program for integrated molecular system (PIMS): Synthesis of materials for molecular memory and rectifier, 01. 2006 – 12. 2006, Gwangji Institute of Science and Technology (GIST)/Center for nanotechnology

3. Living polymerization and control of polymeric nanostructure, 08. 2000 – 10. 2001, Ministry of science and technology

LIST OF PRESENTATIONS

Conference/Symposium Presentation in USA and other countries

1. Hongbo Feng, Kunlun Hong, Jimmy W. Mays, **Nam-Goo Kang**, Synthesis of Well-defined Poly(2-isopropenyl-2-oxazoline) via Living Anionic Polymerization, 251st American Chemical Society National Meeting & Exposition, San Diego CA, USA, March 13 – 17, 2016. *Submitted*

2. Huiqun Wang, Weiyu Wang, **Nam-Goo Kang**,* Jimmy Mays,* Synthesis of styrenic graft thermoplastic elastomers polyisoprene-g-polystyrene (PI-g-PS) through anionic and emulsion polymerization, 251st American Chemical Society National Meeting & Exposition, San Diego CA, USA, March 13 – 17, 2016. *Submitted*

3. Xinyi Lu, Nitil Hiremath, Maria Cecilia Evora, **Nam-Goo Kang**,* Kunlun Hong, Gajanan Bhat, Jimmy W. Mays,* Improved carbon nanotube yarns through crosslinking, 251st American Chemical Society National Meeting & Exposition, San Diego CA, USA, March 13 – 17, 2016. *Submitted*

4. Wei Lu, Kunlun Hong, **Nam-Goo Kang**,* Jimmy Mays,* Novel polyacrylates based thermoplastic elastomers: Synthesis and Chracterization, 3nd Annual APTEC November Meeting (Applied polymer Technology Extension Consortium), Graduate Student Polymer Technology Symposium, Tulane University, New Orleans, Louisiana, USA, November 9, 2015.

5. Hongbo Feng, Kunlun Hong, Jimmy W. Mays, and **Nam-Goo Kang**, Synthesis of Well-defined Poly(2-isopropenyl-2-oxazoline) via Living Anionic Polymerization, 3nd Annual APTEC November Meeting, Graduate Student Polymer Technology Symposium, Tulane University, New Orleans, Louisiana, USA, November 9, 2015.

6. Wei Lu, **Nam-Goo Kang**, Kunlun Hong, Jimmy W. Mays, Synthesis and Characterization of Polyacrylates with Different Pendant Groups for Thermoplastic Elastomers, 250st American Chemical Society National Meeting & Exposition, Boston MA, USA, August 16 – 20, 2015.

7. Weiyu Wang, Tyler White, **Nam-Goo Kang**, Kunlun Hong, Jimmy Mays, New high temperature thermoplastic elastomers based on polybenzofulvene, 249th American Chemical Society National Meeting & Exposition, Denver CO, USA, 2015. 03. 22-03. 26.

8. Weiyu Wang, Tyler White, **Nam-Goo Kang**, Kunlun Hong, Ralf Schlegel, Mario Beiner, Katherine Williams, Samuel Gido, Jimmy Mays, Characterization of novel high temperature thermoplastic elastomers polybenzofulvene-block-polyisoprene-block-polybenzofulvene, 249th ACS National Meeting and Exposition, Denver CO, USA, 2015. 03. 22-03. 26.

9. R. Benjamin Ripy, Xinyi Lu, **Nam-Goo Kang**, Jimmy W. Mays, Improved carbon nanotube fibers through crosslinking and surface modification, 249th ACS National Meeting and Exposition, Denver CO, USA, 2015. 03. 22-03. 26.

10. Weiyu Wang, Tyler White, Xinyi Lu, Andrew Goodwin, Kunlun Hong, **Nam-Goo Kang**,* Jimmy Mays,* 50 °C Improvement of upper service temperature of thermoplastic elastomers by using polymers based on benzofulvene, Gordon Research Conferences (GRC), Four Points Sheraton/Holiday Inn Express, Ventura CA, USA, 2015. 01. 11-01. 16.

11. Weiyu Wang, Tyler White, Xinyi Lu, Andrew Goodwin, Kunlun Hong, **Nam-Goo Kang**,* Jimmy Mays,* 50 °C Improvement of upper service temperature of thermoplastic elastomers by using polymers based on benzofulvene, Gordon Research Seminars (GRS), Four Points Sheraton/Holiday Inn Express, Ventura CA, USA, 2015. 01. 10-01. 11.

12. Tyler White, Weiyu Wang, **Nam-Goo Kang**, and Jimmy W. Mays, Improving upper service temperature of styrenic thermoplastic elastomer by using polybenzofulvene hard blocks, The 66th Southeastern Regional Meeting of the American Chemical Society (SERMACS 2014), Sheraton Music City Hotel, Nashville TN, USA, 2014. 10. 16-10. 19.

13. Weiyu Wang, Tyler White, Andrew Goodwin, Xinyi Lu, **Nam-Goo Kang**,* Jimmy Mays,* Synthesis and characterization of new thermoplastic elastomers based on polybenzofulvene, 248th ACS National Meeting and Exposition, San Francisco CA, USA, 2014. 08. 10-08. 14.

14. Min Wang, Venkatram Nalla, Seaho Jeon, **Nam-Goo Kang**, Wei Ji, Loon-Seng Tan, Long Y. Chiang, Ultrafast two-photon absorption based energy-transfer of fullerosome vesicle nanostructures for nonlinear photonic applications, 221st ECS Meeting (The electrochemical society), Seattle WA, USA, 2012. 05. 06-05. 10.

15. Beom-Goo Kang, **Nam-Goo Kang,** Jae-Suk Lee, Effects of Isomeric pyridine moieties in ethynylstyrene derivatives on their anionic polymerization, International union of pure and applied chemistry (IUPAC), The University of Akron, USA, 2011. 7. 10-7. 15.

16. **Nam-Goo Kang**, Mohammad Changez, Haeng-Deog Koh, Jae-Suk Lee, Synthesis and self-assembly of block copolymers containing pyridines, 2010 Japan-Taiwan bilateral polymer symposium: Toward novel marterials based on advanced macromolecular sciences (JTBPS' 10), Sapporo, Japan, 2010. 7. 1-7. 2.

17. **Nam-Goo Kang**, Suk Gyu Hahm, Moohor Ree, Jae-Suk Lee, Living anionic polymerization of 2-(9H-carbazol-9-yl)ethyl methacrylate with fullerene (C60) for organic memory device, KJF-ICOMEP (KJF international conference on organic materials for electronics and photonics), Jeju, Korea, 2009. 8. 23-8.26.

18. Jung-Pil Lee, Eun-Uk Kim, **Nam-Goo Kang**, Gun-Young Jung, Jae-Suk Lee, Nanopatterns of Au nanoparticles-embedded micelles via nanoimprint lithography, KJF-ICOMEP (KJF international conference on organic materials for electronics and photonics), Jeju, Korea, 2009. 8. 23-8.26.

19. Jung-Pil Lee, Haeng-Deog Koh, **Nam-Goo Kang**, and Jae-Suk Lee, Synthesis of CdS through the block Copolymer micelle template and Tuning the Structure, 19th IC ME&D, Ajou University, 2008. 05. 29-2008. 05. 30.

20. Jae-Suk Lee, Mohammad Changej, **Nam-Goo Kang**, Bum-Goo Kang, Haeng-Deog Koh, Synthesis of Block Copolymers Containing Pyridine Moiety and their Micellization, The 12th World Multi-Conference on Systemics, Cybernetics and Informatics(WMSCI2008), Orlando, USA, 2008. 6. 29-2008. 7. 2.

21. **Nam-Goo Kang**, Mohammad Changez, Jae-Suk Lee, Living anionic polymerization of p-substitutied styrene containing pyridine moieties, Japan-Korea Polymer Young Scientist Symposium, Niigata, Japan, 2008. 10. 22-2008. 10. 25.

22. Jun-Pil Lee, Haeng-Deog Koh, **Nam-Goo Kang**, and Jae-Suk Lee, Incorporation of Fullerence and their Derivatives into Preferred Block Copolymer Domain and their Characterization, Japan-Korea Polymer Young Scientist Symposium, Niigata, Japan, 2008. 10. 22-2008. 10. 25.

23. **Nam-Goo Kang**, Mohammad Changez, Jong-Hoon Yeum, Beom-Goo Kang, Jae-Suk Lee, Gordon research conference (Polymers west graduate research symposium (2007. 1.5-1.7), Polymers (West) (2007. 1.7-1.12)).

24. Haeng-Deog Koh, **Nam-Goo Kang**, Jae-Suk Lee, Core-Corona Inversions of Micellar Au-Block-Copolymer Nanohybrides, IUPAC International Symposium on Ionic Polymerization 2007, Kloster Banz, Germany, 2007. 9. 2-9. 7.

25. **Nam-Goo Kang**, Mohammad Changez, Jae-Suk Lee, Synthesis of poly(2-(4-vinylphenyl)pyridine) and its block copolymers by living anionic polymerization, IUPAC International Symposium on Ionic Polymerization 2007, Kloster Banz, Germany, 2007. 9. 2-9. 7.

26. **Nam-Goo Kang**, Mohammad Changez, Jae-Suk Lee, Living anionic polymerization of 2-(4-vinylphenyl)pyridine containing an amphiphilic moiety, 2007 International Symposium on Advanced Macromolecules and Nano-Materials with Precisely Designed Architectures, Hokkaido University, Sapporo, Japan, 2007. 10. 4-10.6.

27. Haeng-Deog Koh, **Nam-Goo Kang**, Jae-Suk Lee, Location Control of Au Nanoparticles in Block Copolymer Micelles, 2007 International Symposium on Advanced Macromolecules and Nano-Materials with Precisely Designed Architectures, Hokkaido University, Sapporo, Japan, 2007. 10. 4-10.6.

28. Jun-Pil Lee, Haeng-Deog Koh, **Nam-Goo Kang**, Sandhyarani Acharya, and Jae-Suk Lee, Incorporation of carbon nanotubes and fullerenes into preferred block copolymer domain, 2007 International Conference on nano science and nano technology, Kimdaejung convention center, Gwangju, Korea, 2007. 11. 8-11. 9.

29. Haeng-Deog Koh, Jun-Pil Lee, **Nam-Goo Kang**, Jae-Suk Lee, Metallic/ Semiconductor Nanoparticles-Enbedded Block Copolymer Micelles, 2007 NAIST/GIST joint Symposium on Advanced Materials, 2007. 11.22-23.

30. **Nam-Goo Kang**, Haeng-Deong Koh, Shahinur Rahman, Jae-Suk Lee, Living anionic polymerization of 2-vinylpyridine, their block copolymers and micelles, 2007 NAIST/GIST joint Symposium on Advanced Materials, 2007. 11.22-23.

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32. Hyo-Jin Jeon, **Nam-Goo Kang**, Jae-Suk Lee, Synthesis and Characterization of conjugated polymer with phosphorescent iridium complex and carbazole derivatives in the main chain, 2006 GIST/NAIST Joint Symposium on Advanced Materials, NAIST 2006. 11. 20-11.25.

33. Chang-Lyoul Lee, **Nam-Goo Kang**, Young-Sun Cho, Jae-Suk Lee and Jang-Joo Kim, Poymer Elctophosphorescent Device: Comparison of Phosphorescent Dye Doped and Coordinated Systems, International Conference on Photo-Responsive Organics and Polymers 2001 (ICPOP 01), August 19-25, 2001, Jeju, Korea, 92-93.

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1. **Nam-Goo Kang**, Nguyen Van Lam, Jae-Suk Lee, Synthesis of fullerene(C60)-containing poly(2-(9H-carbazol-9-yl)ethyl methacrylate) by living anionic polymerization, The Polymer Society of Korea, GIST, 2009. 10. 8- 10. 9.

2. **Nam-Goo Kang**, Mohammad Changez, Jae-Suk Lee, Living Anionic Polymerization of 2-(4'-vinylbiphenyl-4-yl)pyridine), The Polymer Society of Korea, GIST, 2008. 10. 09-10. 10.

3. **Nam-Goo Kang**, Suk Gyu Hahm, Moonhor Lee, Jae-Suk Lee, Synthesis of polymers containing Various Carbazole and Fullerene moieties, Korean Chemical Society, KINTEX, 2008. 4. 17- 4. 18.

4. **Nam-Goo Kang**, Suk Gyu Hahm, Tae-Wook Kim, Takhee Lee, Moonhor Lee, Jae-Suk Lee, Anionic Polymerization of Carbazole Derivatives and Functionalization with Fullerene for Polymer Memory Device, The Polymer Society of Korea, DCC, 2008. 4. 10-4. 11.

5. **Nam-Goo Kang**, Jae-Suk Lee, Synthesis of novel copolymers containing cyclometalated Iridium(III) complex and carbazole derivatives in main chain, Korean Chemical Society, EXCO, 2007. 10. 18-10.19.

6. **Nam-Goo Kang**, Jae-Suk Lee, Synthesis of Block copolymers of 2-(4-vinyl phenyl)pyridine by living anionic polymerization, Korean Chemical Society, EXCO, 2007. 10. 18-10.19.

7. **Nam-Goo Kang**, Mohammad Changez, Jae-Suk Lee, Block copolymerization of 2-(4-vinylphenyl)pyridine with various monomers by sequential living anionic polymerization and study of its reactivity order and morphology, The Polymer Society of Korea, KINTEX, 2007. 10. 11-10. 12.

8. **Nam-Goo Kang**, Mohammad Changez, Jae-Suk Lee, Flower micelles from block copolymer poly(2-(4-vinylphenyl)pyridine)-b-poly(2-vinyl)pyridine), The Polymer Society of Korea, KINTEX, 2007. 10. 11-10. 12.

9. **Nam-Goo Kang**, Hyo-jin Jeon, Jae-Suk Lee, Synthesis of Novel Copolymers Containing Cyclometalated Iridium(III) Complex and Carbazole Derivatives in Main Chain, The Polymer Society of Korea, KINTEX, 2007. 10. 11-10. 12.

10. **Nam-Goo Kang**, Jae-Suk Lee, Synthesis of poly(2-(4-vinylphenyl)pyridine by living anionic polymerization, Korean Chemical Society, KINTEX, 2006.10.19-10. 20.

11. **Nam-Goo Kang**, Jae-Suk Lee, Living anionic polymerization of 2-(4-vinyphenyl) pyridine and Synthesis of its homopolymers and blockcopolymers, IUPAC-PSK30, Pusan, 2006. 10. 10-10. 13.

12. Jung-Pil Lee, **Nam-Goo Kang**, Byungjin Cho, Takhee Lee, Jae-Suk Lee, Electrical Characterization of P2VP-b-PCzMA Functional Block Copolymer with Nanoparticles, The Polymer Society of Korea, GIST, 2009. 10. 8-10. 9.

13. Well-Organized Au/CdS Nanoparticles Synthesized in Block Copolymer Templates, Jung-Pil Lee, **Nam-Goo Kang**, Jae-Suk Lee, Korean Chemical Society, KINTEX, 2008. 4. 17-4. 18.

14. Jung-Pil Lee, **Nam-Goo Kang**, Jae-Suk Lee, Tuning the Structure of PS-b-P2VP Block Copolymer Matrix Containing CdS Nanoparticles, Korean Chemical Society, KINTEX, 2008. 4. 17-4. 18.

15. Jun-Keun Min, **Nam-Goo Kang**, Jae-Suk Lee, Precise Synthesis of Poly(n-hexyl isocyanate) using Sodium Diphenylamine as a New Initiator by Living Anionic Polymerization, Korean Chemical Society, EXCO, 2007. 10. 18-10.19.

16. Jun-Keun Min, **Nam-Goo Kang**, Jae-Suk Lee, Novel Oxo Anionic Initiators, Sodium Peroxide and Sodium Benzhydrol for Living Anionic Polymerization of n-Hexyl Isocyanate, Korean Chemical Society, EXCO, 2007. 10. 18-10.19.

17. Jong-Hoon Yeum, **Nam-Goo Kang**, Jae-Suk Lee, Synthesis of Poly (para-4-vinylphenyl triphenyl amine) and Block copolymers by Living Anionic Polymerization, The Polymer Society of Korea, KINTEX, 2007. 10. 11-10. 12.

18. Jung-Pil Lee, Haeng-Deog Koh, **Nam-Goo Kang**, Jae-Suk Lee, Control of CNT Morphology by Using Block Copolymer as a Template, The Polymer Society of Korea, KINTEX, 2007. 10. 11-10. 12.

19. Haeng-Deog Koh, **Nam-Goo Kang**, Jae-Suk Lee, CdS/C60 Nanoparticles Embedded into Block Copolymer Micelles and Their Photophysical Properties, Korean Chemical Society, EXCO, 2007. 10. 18-10.19.

20. Haeng-Deog Koh, Jung-Pil Lee, **Nam-Goo Kang**, Jae-Suk Lee, Harmonious Au/CdS and CdS/C60 Nanoparticles Synthesized in Block Copolymer Micelles as Templates, The Polymer Society of Korea, KINTEX, 2007. 10. 11-10. 12.

21. Jung-Pil Lee, Haeng-Deog Koh, **Nam-Goo Kang**, Jae-Suk Lee, Synthesis of CdS and Control of the Structure Using PS-b-P2VP Block Copolymer Templates, The Polymer Society of Korea, DCC, 2008. 4. 10-4. 11.

22. Jung-Pil Lee, Haeng-Deog Koh, **Nam-Goo Kang**, Jae-Suk Lee, Synthesis of CdS and Control of the Structure Using PS-b-P2VP Block Copolymer Templates, The Polymer Society of Korea, DCC, 2008. 4. 10-4. 11.

23. Young-Sun Cho, Joo-Young Kim, **Nam-Goo Kang**, Jae-Suk Lee, Nanoparticle and preparation of nanocomposites from poly(2-vinylpyridine-b-styrene), 3rd Workshop of living polymerization and control of polymeric nanostructure P.50, 2001.

Key SKILLS

Experimental:

1. Designed and Prepared Various Apparatus for Living Anionic Polymerization Using Glass Blowing.
2. Performed Experiments under High Vacuum (10^{-3}-10^{-6} mmHg) Using Schlenck Line, and Inert Conditions Using Glove Box.
3. Skilled at Multistep Synthesis of Functional Small Organic Molecule and Macromonomer.
4. Experienced in developing application of Organic Electronics, Thermoplastic Elastomers, Carbon Dioxide Gas Separations, and Carbon Fibers

Analytical:

1. Skilled at Maintenance, Troubleshooting and Characterization of Various Polymeric Architectures Using GPC with Multi-detector.
2. Extensively worked on NMR, FTIR, UV-vis, GC-Mass, Cyclo Voltametry, DLS, Fluorescence Spectrometer, DSC, TGA.
3. Experienced with UTM, XRD, DMA, SEM, AFM and TEM
4. Photoluminescence (PL) Spectroscopy, , Cyclovoltametry (CV), I-V-L Measurement, Electroluminescence (EL) Spectroscopy, Biswitching Property Measurement

Software: MS Windows, MS Office, ChemDraw, Origin Lab, several instruments software

REFERENCES

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