

Joong Ho Moon at FIU

EDUCATION

Degree	Institution	Field	Dates
Postdoctoral Associate	Massachusetts Institutes of Technology (MIT) (ADVISOR: TIMOTHY M. SWAGER)	Polymer Chemistry	1999 – 2001
Ph. D	Pohang University of Science and Technology (POSTECH), Pohang, Korea (ADVISOR: JOON WON PARK)	Materials Chemistry	1996 – 1999
M.S.	POSTECH	Materials Chemistry	1994 – 1996
B.S.	Busan National University, Busan, Korea	Chemistry Education (military service 1988 – 1990)	1986 – 1993

PART-TIME ACADEMIC EXPERIENCE

Institution	Rank	Field	Date
MIT Institute for Soldier Nanotechnology (ISN)	Visiting Scientist	Materials Chemistry	2004 – 2008

NON-ACADEMIC EXPERIENCE

Place of Employment	Title	Date
ICx Technology (now merged with FLIR) Cambridge, MA	Principal Investigator Senior Research Scientist	Jun. 2001 – Jul. 2008

EMPLOYMENT RECORD AT FIU

Rank	Date
Professor	2020 –
Associate Professor	2014 – 2020
Assistant Professor	2008 – 2014

PUBLICATIONS

Underline denotes FIU undergraduate, graduate, or postdoctoral scholar. Corresponding authorship is marked as an asterisk. Co-first author is marked as a cross.

1. “Carbamoylated guanidine-containing polymers for non-covalent functional protein delivery in serum-containing media”, A. Barrios, M. Estrada, J. H. Moon,* *Angew. Chem. Int. Ed.* (2022) (10.1002/anie.202116722)
2. “Guanylurea-functionalized conjugated polymer enables RNA interference in ex vivo human airway epithelium”, M. S. Ahmed, R. K. Dutta, P. Manandhar, X. Li, H. Torabi, A. Barrios, P. Wang, S. Chinnapaiyan, H. Unwalla,* **J. H. Moon**,* *Chemical Communications*, 55, 7804-7807 (2019) (10.1039/C9CC02856K)
3. “Phenyleneethynylene trimer-based rigid-flexible [2+2] macrocycles for nucleic acid labelling in live cells”, **J. H. Moon**,* P. Manandhar, H. Torabi, M. Rohman, L. Mathivathanan, K.-H. Lee, and S. Irle, *Chemical Communications*, 55, 5930–5933 (2019) (10.1039/C9CC02162K)
4. “Extracellular Surface Potential Mapping by Scanning Ion Conductance Microscopy Revealed Transient Transmembrane Pore Formation Induced by Conjugated Polymer Nanoparticles”, F. Feng,⁺ P. Manandhar,⁺ M. S. Ahmed, S. Chang, N. Panday, H. Zhang, **J. H. Moon*** and J. He*, *Macromolecular Bioscience*, 19 (2), 1800271 (2019).
5. “Controlled ionic complexation of positively-charged phenylene-based conjugated polymers by modulated backbone structures”, P. Manandhar, T. Vokata, S. Lee, Y. Lee, H. M. Jung, S. Shim*, and **J. H. Moon***, *Polymer International*, 67 (12), 1629–1637 (2018) (10.1002/pi.5686)
6. “Synthesis of antimicrobial poly(guanylurea)s”, M. S. Ahmed, T. Annamali, X. Li, A. Seddek, P. Teng, Y. Tse-Dinh, and **J. H. Moon***, *Bioconjugate Chemistry*, 29, 1006–1009 (2018) (10.1021/acs.bioconjchem.8b00057)
7. “Amide-based oligomers for low-viscosity composites of polyamide 66”, J. Lee, W.G. Seo, J. Kim, Y.S. Kim, Y. Yoo, **J. H. Moon**, S.G. Kim, H.M. Jung*, *Macromolecular Research*, 25 (10), 1000–1006 (2017) (DOI: 10.1007/s13233-017-5129-2)
8. “Scanning ion conductance microscopic study for cellular uptake of cationic conjugated polymer nanoparticles”, Y. Shan, N. Panday, Y. Myoung, M. Twomey, X. Wang, W. Li, E. Celik, V. Moy, H. Wang*, **J. H. Moon***, J. He*, *Macromolecular Bioscience*, 16, 599–607 (2016) (10.1002/mabi.201500320)
9. “Mitochondria-specific conjugated polymer nanoparticles”, M. Twomey, E. Mendez, R. Manian, S. Lee*, and **J. H. Moon***, *Chemical Communications*, 52, 4910–4913 (2016) (10.1039/C6CC00810K)
10. “Synthesis of Biodegradable Conjugated Polymers with Controlled Backbone Flexibility”, T. Vokatá, M. Twomey, E. Mendez, **J. H. Moon***, *Journal of Polymer Science, Part A. Polymer Chemistry*, 53, 1403–1412 (2015) (cover page) (10.1002/pola.27622)
11. “Differential interactions of conjugated polymer nanoparticles with glycosaminoglycans in synthetic urine”, M. Twomey, T. Vokatá, M. R. Kumar and **J. H. Moon***, *Chemical Communications*, 51, 4065–4068 (2015) (10.1039/C5CC00110B)
12. “Fabrication of core-shell nanoparticles via controlled aggregation of semiflexible conjugated polymer and hyaluronic acid”, M. Twomey, Y. Na, Z. Roche, E. Mendez, N. Panday, J. He, **J. H. Moon***, *Macromolecules*, 46, 6374-6378 (2013) (10.1021/ma400996y).
13. “Synthesis of conjugated random co-polymers via the decarboxylative coupling of propiolic acids with aryl halides”, T. Vokata, M. R. Kumar, K. Park, **J. H. Moon**,* S. Lee*, *Synthetic Letters*, 24, 1563-1567 (2013) (10.1055/s-0033-1339189)

*Highlighted in Synfacts 2013, 9(9), 0947 (10.1055/s-033-1339630)

14. "Side chain and backbone structure-dependent cellular toxicity and subcellular localizations of conjugated polymer nanoparticles", E. Mendez and **J. H. Moon**,* *Chemical Communications*, 49 (54), 6048 (2013) (10.1039/C3CC43015D)
15. "Cavelolae-mediated endocytosis of conjugated polymer nanoparticles", J. Lee, M. Twomey, C. Machado, G. Gomez, M. Doshi, A. J. Gesquiere, **J. H. Moon***, *Macromolecular Bioscience*, 13, 913 (2013) (10.1002/mabi.201300030)
16. "Synthesis of phenyleneethynylene-doped poly(phenylenebutadiynylene)s for live cell imaging" T. Vokata, **J. H. Moon***, *Macromolecules*, 46, 1253 (2013) (10.1021/ma3019975)
17. "Regioselective One- Pot Synthesis of Isocoumarins and Phthalides from 2- Iodobenzoic Acids and Alkynes by Temperature Control", M. R. Kumar, F. M. Irudayanathan, **J. H. Moon**, S. Lee*, *Advanced Synthesis and Catalysis*, 355(16), 3221 (2013) (10.1002/adsc.201300561)
18. "3D-resolved fluorescence and phosphorescence lifetime imaging using temporal focusing wide-field two-photon excitation", H. Choi, D. S. Tzeranis, J. W. Cha, P. Cl menceau, S. J. G. de Jong, L. K. van Geest, **J. H. Moon**, I. V. Yannas, and P. T. C. So*, *Optics Express*, 24, 26219 (2012)
19. "Conjugated Polymer Nanoparticles for Small Interfering RNA Delivery", **J. H. Moon**,* E. Mendez, Y. Kim, A. Kaur, *Chemical Communications*, 47, 8370 (2011) (10.1039/c1cc10991j)
20. "Controlled aggregation of conjugated polymer nanoparticles via organic acid treatments", Y.-J. Ko, E. Mendez, **J. H. Moon**,* *Macromolecules*, 44, 5527 (2011) (10.1021/ma200661h)
21. "Conjugated polymer nanoparticles for effective siRNA delivery to tobacco BY-2 protoplasts", A. T. Silva, A. Nguyen, C. Ye, J. Verchot,* and **J. H. Moon**,* *BMC Plant Biology*, 10, 291 (2010) (10.1186/1471-2229-10-291)
22. "Conjugated Polymer Nanoparticles for Two-photon Imaging of Endothelial Cells in a Tissue Model", A. Abdul Rahim, W. McDaniel, K. Bardon, S. Srinivasan, V. Vickerman, P. T. C. So, and **J. H. Moon**,* *Advanced Materials*, 21, 3492 (2009) (10.1002/adma.200900416)
23. "One-pot synthesis of diarylalkynes using palladium-catalyzed Sonogashira reaction and decarboxylative coupling of sp carbon and sp² carbon", J. Moon, M. Jeong, H. Nam, **J. H. Moon**, H. M. Jung, and S. Lee*, *Organic Letters*, 10, 945 (2008) (10.1021/ol703130y)
24. "Live cell permeable poly(p-phenylene ethynylene)", **J. H. Moon**,* William McDaniel, Paul MacLean and L. F. Hancock, *Angewandte Chemie International Edition*, 46, 8223 (2007) (10.1002/anie.200701991)
25. "Conjugated polymer nanoparticles for biochemical protein kinase assay", **J. H. Moon**,* Paul MacLean, William McDaniel and L. F. Hancock, *Chemical Communications*, 4910 (2007) (10.1039/b710807a)
26. "Facile fabrication of poly(p-phenylene ethynylene)/colloidal silica composite for nucleic acid detection", **J. H. Moon**, William McDaniel and L. F. Hancock*, *Journal of Colloid and Interface Science*, 300, 117 (2006) (10.1016/j.jcis.2006.03.063)
27. "Capture and Detection of a Quencher Labeled Oligonucleotide by Poly(phenylene ethynylene) Particles", **J. H. Moon**, R. Deans, E. Krueger, and L. F. Hancock*, *Chemical Communications*, 104 (2003) (10.1039/b207186j)
28. "Poly(p-phenylene ethynylene) Brushes", **J. H. Moon** and T. M. Swager*, *Macromolecules*, 35, 6086 (2002) (10.1021/ma025539r)
29. "Selective Cleavage of Functional Groups in Functionalized Organic Monolayers by Synchrotron Soft X-ray", T. -H. Kang, K. -J. Kim, C. -C. Hwang, K. Ihm, H. -J. Shin, M. -K. Lee, B. Kim, Y. -H. La, **J. H. Moon**, H. J. Kim, J. W. Park*, C. -Y. Park, *Surface Review and Letters*, 9(1), 305 (2002) (10.1142/S0218625X02002233)
30. "A Hyperbranched Poly(ethyleneimine) Grown at the Surfaces", H. J. Kim, **J. H. Moon** and J. W. Park*, *Journal of Colloid and Interface Science*, 227, 247 (2000) (10.1006/jcis.2000.6861)
31. "Selective Cleavage of the Carbon-Halide Bond in Substituted Benzaldimine Monolayers by Synchrotron Soft X-ray: Anomalously Large Cleavage Rate of the Carbon-Bromide Bond", **J. H. Moon**, Y. -H. La, J. Y. Shim, B. J. Hong, K. -J. Kim, T. -H. Kang, B. Kim, H. Kang, and J. W. Park*, *Langmuir*, 16, 2981 (2000) (10.1021/la991061h)

32. "Selective Cleavage of the Nitro Group from a Nitrophenyl Monolayer by Synchrotron Soft X-ray", **J. H. Moon**, K. -J. Kim, T. -H. Kang, B. Kim, H. Kang, and J. W. Park*, *Langmuir*, 14, 5673 (1998) (10.1021/la980349o)
33. "Absolute Surface Density of the Amine Group of the Aminosilylated Thin Layers: UV-vis Spectroscopy, Second Harmonic Generation, and Synchrotron-Radiation Photoelectron Spectroscopy Study", **J. H. Moon**, J. H. Kim, K. -J. Kim, T. -H. Kang, B. Kim, C. H. Kim, J. H. Hahn and J. W. Park*, *Langmuir*, 13, 4305 (1997) (10.1021/la9705118)
34. "Self-Assembly of Aminosilane Layers: Determination of Surface Density of the Amine Group Through a Reversible Chemical Reaction", **J. H. Moon**, J. W. Shin and J. W. Park*, *Molecular Crystal Liquid Crystal*, 295, 185 (1997)
35. "Self-Assembly of Nonlinear Optical Chromophores Through Ionic Interactions", **J. H. Moon**, J. U. Choi, J. H. Kim, H. Chung, J. H. Hahn, S. B. Kim and J. W. Park*, *Journal of Materials Chemistry*, 6, 365 (1996) (10.1039/jm9960600365)
36. "Formation of Uniform Aminosilane Thin Layers: An Imine Formation to Measure Relative Surface Density of the Amine Group", **J. H. Moon**, J. W. Shin, S. Y. Kim and J. W. Park*, *Langmuir*, 12, 4621 (1996) (10.1021/la9604339)
37. "Self-Assembly of Nonlinear Optical Chromophoric Layers Through the Ionic Interaction", J. U. Choi, C. B. Lim, T. Y. Chung, **J. H. Moon**, J. H. Hahn, S. B. Kim and J. W. Park*, *Synthetic Metal*, 71, 1729 (1995) (10.1016/0379-6779(94)03025-2)

Proceedings

1. "Aggregation control of poly(p-phenylene ethynylene)s in water for biological imaging applications", J. H. Moon, A. Nguyen, and Y. Ko, American Chemical Society, PMSE preprint, v240 (2010)
2. "Super bright conjugated polymer nanoparticles for long-term cell tracking", N. Abdul Rahim, W. McDaniel, K. Bardon, V. Vickerman, J. Moon, P. So, American Chemical Society, PMSE preprint, v237 (2009)
3. "Conjugated polymer nanoparticles for live cell imaging", J. H. Moon, W. McDaniel, and L. F. Hancock, American Chemical Society, PMSE preprint, v235 (2008)
4. "Stem-loop oligonucleotide beacons as switches for amplifying-fluorescent-polymer-based biological warfare sensors", K. D. Clinkenbeard, A. Ramachandran, J. R. Malayer, J. H. Moon and L. F. Hancock, Proc. SPIE, 5071, 272 (2003)
5. "Oligonucleotide Detection with Amplifying Fluorescent Polymer Particles", J. H. Moon, R. Deans, E. Krueger, and L. F. Hancock, American Chemical Society, Polymer Preprint, 43(2), 764 (2002)

Chapters in Books

1. Moon, J.H. Conjugated polymers for effective gene delivery. In *Conjugated polymers for biological and biomedical applications*; Liu, B., Ed.; Wiley-VCH Verlag GmbH & Co. KGaA, 2018; pp 215-242

FUNDED RESEARCH

1. "Poly-conjugated oligomers for noninvasive functional protein delivery", **Moon (PI)**, NSF, 2021-2022
2. "Evaluation of poly(guanyurea)-piperazine 8K as an antibacterial agent for Colgate's home care products", **Moon (PI)**, Colgate-Palmolive, 2019-2020
3. "CAREER: Self-assembly of biodegradable conjugated polymers for RNA interference", **Moon (PI)**, NSF, 09/01/14-02/28/22 (with no cost extension)

4. “NSF REU Supplement”, **Moon (PI)**, NSF, 2018-2019
5. “Development of 35% lightweight CCB module for automotive using highly impregnated nylon based LFT composites”, Park (PI), **Moon (Co-PI)**, Korea Evaluation Institute of Industrial Technology, 10/1/14-9/30/19.
6. “Novel Polymeric nanoparticles for drug delivery applications” McGoron (PI), NIH, 08/01/13-07/31/15, **Moon (Co-I)**
7. “Advanced Self-powered Systems of Integrated Sensors and Technologies (ASSIST)”, PIs: Drs. Misra and Muth (North Carolina State Univ.), Dr. Bhansali (FIU), Dr. Lach (Univ. Virginia), and Dr. Jackson (Penn. State Univ.), NSF Nanosystems Engineering Research Center, 09/01/12-08/31/17, **Moon (Co-PI)**
8. “Multiphoton Probes for Biomedical Imaging”, **Moon (PI)**, NIH, 07/01/2011-06/30/2015.
9. “Conjugated polymer nanoparticles via aggregation control”, **Moon (PI)**, FIU CAS Summer Faculty Development Award, 2010.

PATENT DISCLOSURES, APPLICATIONS, AND AWARDS

1. “Modified guanidine-containing polymers for biological delivery”, J. H. Moon, A. Barrios, M. M. Diaz (US Patent application 17/578,709 (**Jan. 2022**))
2. “Guanylurea functionalized peptides and proteins for therapeutics”, J. H. Moon (**US Patent 11,123,442**) (**Sep. 2021**)
3. “Modulated guanine-containing polymers or nanoparticles”, J. H. Moon and A. Barrios (**US Patent 10,688,189B1**) (**Jun. 2020**)
4. “Modulated guanine-containing polymers or nanoparticles”, J. H. Moon and M. S. Ahmed (**US Patent 10,568,902B2**) (**Feb. 2020**)
5. “Conjugated oligomer-based Macrocycles for live cell imaging”, J. H. Moon (US patent application US 16/433,243) (**Jun. 2019**)
6. “Antimicrobial poly(guanylurea)s”, J. H. Moon and M. S. Ahmed, PCT/US2019/020656 (**2019**)
7. “Antimicrobial poly(guanylurea)s”, J. H. Moon and M. S. Ahmed (**US Patent 10,017,462B1**) (**Jun. 2018**)
8. “Flexible poly-p-(phenyleneethynylene)s with controlled conjugation length and biodegradable conjugated polymers for target organelle specific labeling and drug delivery”, J. H. Moon, R. Manian, E. Mendez (**US Patent 9,757,410 B2**) (**Sep. 2017**)
9. “One-pot synthesis of flexible poly-p-(phenyleneethynylene) s with controlled conjugated length”, J. H. Moon and T. Vokata (**US Patent 9,676,886 B2**) (**Jun. 2017**)
10. “Emissive species for clinical imaging”, J. H. Moon, (**US Patent 7,521,232**) (**2009**)

PROFESSIONAL HONORS, PRIZES, AND FELLOWSHIPS

2020	FIU CASE Faculty Award (Research)
2019	FIU CASE Faculty Award (Research)
2015	FIU Top Scholars
2014	NSF CAREER award
2006	NIH/NIGMS, SBIR grant award (1-R43-GM075516-01)
1999	Korea Science and Engineering Foundation Postdoctoral Fellowship
1999	Outstanding Research at Pohang Advanced Light Source