



Nam-Gyu Park is Distinguished professor and SKKU-Fellow at School of Chemical Engineering, Sungkyunkwan University (SKKU). He received his B.S. degree in chemical education, M.S. and Ph.D. degrees in chemistry from Seoul National University in 1988, 1992 and 1995, respectively. He worked at ICMCB-CNRS, France, from 1996 to 1997 and at National Renewable Energy Laboratory, USA, from 1997 to 1999 as postdoctoral researchers. He was director of solar cell research center at Korea Institute of Science and Technology (KIST) from 2005 to 2009 and principal scientist at Electronics and Telecommunications Research Institute (ETRI) from 2000 to 2005 before joining SKKU as a full professor in 2009. He is a fellow of Korean

Academy of Science and Technology (KAST) since 2017. He has been working on high efficiency mesoscopic nanostructured solar cells since 1997. *He is pioneer of solid-state perovskite solar cell, which was first developed in 2012.* He was selected as a *New Class of Nobel Prize-Worthy Scientists* in September 20, 2017 and included in highly cited researchers (HCR, top 1% scientists) in Nov. 15, 2017, Nov. 27, 2018, and Nov. 19, 2019 by Clarivate Analytics. He received awards including Scientist Award of the Month (2008), KIST Award of the Year (2009), Dupont Science and Technology Award (2010), SKKU fellowship (twice 2013 and 2018), PVSEC Hamakawa Award (2015), Dukmyung KAST Engineering Award (2016), ACS-KCS Excellence Award (2018), and Samsung *Ho-Am Prize* (2018). Prof. Park has currently more than 300 refereed publications and more than 70 patents. He received H-index of 86 (google scholar). He is Senior Editor of ACS Energy Letters and serves on the Editorial Advisory Board for Chem. Rev., ChemSusChem, and Solar RRL.

◆ Education

1981-1988 Seoul National University, Chemical Education, BS

1989-1992 Seoul National University, Chemistry, MS

1992-1995 Seoul National University, Chemistry, PhD (Major: Inorganic Solid State Chemistry)

◆ Professional Experience

1996.3 - 1997.5: France ICMCB-CNRS, post-doc

1997.6 - 1999.12: National Renewable Energy Laboratory (NREL), post-doc

2000.1 - 2005.11: ETRI, Korea, Principal scientist

2005.12 - 2009.6: KIST, Korea, Director of Solar Cell Research Center

2017.1 - : KAST (Korean Academy of Science and Technology), Fellow

2009.7 - : Sungkyunkwan University (SKKU), School of Chemical Engineering, Professor/SKKU Fellow

◆ Selected Publications

1. Multifunctional Chemical Linker Imidazoleacetic Acid Hydrochloride for 21% Efficient and Stable Planar Perovskite Solar Cells, *Adv. Mater.* 1902902 (2019)
2. Bi-facial stamping for High Efficiency Perovskite Solar Cells, *Energy & Environ. Sci.*, 12, 308 (2018)
3. Printable organometallic perovskite enables large-area, low-dose X-ray imaging, *Nature*, 550, 87 (2017)
4. Towards stable and commercially available perovskite solar cells, *Nature Energy*, 1, 16152 (2016)
5. Self-formed grain boundary healing layer for highly efficient $\text{CH}_3\text{NH}_3\text{PbI}_3$ perovskite solar cells, *Nature Energy*, 1, 16081, (2016)
6. Growth of $\text{CH}_3\text{NH}_3\text{PbI}_3$ cuboids with controlled size for high-efficiency perovskite solar cells, *Nature Nanotechnology*, 9, 927 (2014)
7. Water photolysis at 12.3% efficiency via perovskite photovoltaics and Earth-abundant catalysts, *Science*, 26, 1593 (2014)
8. Mechanism of carrier accumulation in perovskite thin-absorber solar cells, *Nature Communications*, 4, 2242 (2013)
9. Quantum-dot-sensitized solar cell with unprecedentedly high photocurrent, *Scientific Reports (Nature Publishing)*, 3, 1050 (2013)
10. Organometal perovskite light absorbers toward a 20% efficiency low-cost solid-state mesoscopic solar cell, *J. Phys. Chem. Letters*, 4, 2423 (2013) (Cover)
11. Lead iodide perovskite sensitized all-solid-state submicron thin film mesoscopic solar cell with

- efficiency exceeding 9%, *Scientific Reports (Nature Publishing)*, 2, 591 (2012) *Highly cited article*
12. 6.5% efficient perovskite quantum-dot-sensitized solar cell, *Nanoscale*, 3, 4088 (2011)
13. Selective positioning of organic dyes in a mesoporous inorganic oxide films, *Nature Materials*, 8, 665 (2009)

◆ **H-index: 86** (Google Scholar): <https://scholar.google.com/citations?user=tjJ2rHQAAAAJ&hl=en&oi=ao>
75 (Web of Science; research ID: F-2477-2014): <http://www.researcherid.com/rid/F-2477-2014>

◆ **ORCID ID:** 0000-0003-2368-6300

◆ **Books**

- 1) "Organic-Inorganic Halide Perovskite Photovoltaics" Ed. N.-G. Park, M. Gratzel and T. Miyasaka, **Springer (2016)**, ISBN: 978-3-319-35114-8
- 2) "High Efficiency Mesoscopic Organometal Halide Perovskite Solar Cells" in "Unconventional Thin Film Photovoltaics", Ed. Enrico Da Como, Filippo De Angelis, Henry Snaith, Alison Walker, **Royal Society of Chemistry (2016)**, ISBN: 978-1-78262-293-2
- 3) "Sensitized Mesoscopic Solar Cells" **McGraw-Hill Yearbook of Science and Technology (2015)**, ISBN: 978-0-07-183576-3
- 4) "Perovskite Solar Cell" in "Advanced concepts in photovoltaics", Ed. A.J. Nozik, **Royal Society of Chemistry (2014)**, ISBN: 978-1-84973-591-9
- 5) "Advanced technologies of perovskite-based thin film solar cells" in "Recent development of perovskite thin film solar cells", Ed. T. Miyasaka and H. Segawa, **CMC Publishing Co., Japan (2014)**, ISBN: 978-4-907837-25-9 C3058.
- 6) "Perovskite-based solid state hybrid solar cells" in "Trends in Advanced Sensitized and Organic Solar Cells", Ed. T. Miyasaka, **CMC Publishing Co, Japan (2012)**, ISBN: 978-4-7813-0620-9 C3054
- 7) "Metal oxide nanostructures and their photovoltaic applications" in *Metal Oxide Nanostructures and Their Applications*, Ed. Ahmad Umar, **American Science Publisher, USA (2009)**, ISBN: 1-58883-170-1
- 8) "Research trend of dye-sensitized solar cell in Korea" in "Recent Advances in Research and Development for Dye-Sensitized Solar Cells II", Ed. H. Arakawa, **CMC Publishing Co, Japan (2007)**, ISBN: 978-4-88231-665-7 C3054

◆ **Patents:** ca. 70 including "Perovskite Solar Cell"

◆ **Technology Transfer:** "Dye-sensitized solar cell" to Dongjin Semichem (amount: 2.8 Billion KRW)

◆ **Awards**

- ▶ Scientist Award of the Month (Oct. 13, 2008, Korean Government)
- ▶ KIST Award of Month (Aug. 8, 2008, KIST)
- ▶ Kyunghang Electricity and Energy Award (Oct. 8, 2008, Korean Government)
- ▶ Best KIST Award (Feb. 10, 2009, KIST)
- ▶ Dupont Science and Technology Award (May 27, 2010, Dupont Korea)
- ▶ SKKU Fellowship (Feb. 26, 2013, SKKU)
- ▶ 100 National Outstanding Awards (Aug. 28, 2013, Korean Government)
- ▶ MRS Outstanding Research Award (Apr. 24, 2014, MRS, USA)
- ▶ WCPEC-6 Paper Award (Nov. 27, 2014, Kyoto, Japan)
- ▶ Hamakawa Award of PVSEC (Nov. 16, 2015, Busan, Korea)
- ▶ Dukmyung KAST Engineering Award (Nov. 28, 2016, KAST)
- ▶ Outstanding Paper Award (July 13, 2017, Nano Convergence, Springer Nature)
- ▶ Citation Laureates (September 20, 2017, Clarivate Analytics)
- ▶ Highly Cited Researchers (November 15, 2017, Clarivate Analytics)
- ▶ SKKU Fellowship (Feb. 22, 2018, SKKU)
- ▶ ACS-KCS Excellence Award (April 19, 2018, American Chemical Society)
- ▶ Lee Hsun Lecture Award (April 27, 2018, Chinese Academy of Sciences)
- ▶ Ho-Am Prize (June 1, 2018, Ho-Am Foundation)
- ▶ Prime Minister Award (July 11, 2018, No. 6912)

- ▶ Science Minister Award (July 18, 2018, No. 25595)
- ▶ Highly Cited Researchers (November 27, 2018 Clarivate Analytics)
- ▶ Scientist award of the year selected by journalists (November 29, 2018)
- ▶ Highly Cited Researchers (November 19, 2019 Clarivate Analytics)

◆ Journal Editor and Editorial Board

- ▶ Senior Editor: ACS Energy Letters, ACS (since January 2019 ~)
- ▶ Associate Editor: Sustainable Energy & Fuel, RSC (since January 2017 ~2018)
- ▶ Section Editor: Current Opinion, ECS (2018)
- ▶ Guest Editor: Materialstoday Energy, Elsevier (2017)
- ▶ Editorial Board: ChemSusChem, Wiley (since January 2016 ~)
- ▶ Editorial Board: Energy Conversion Materials, Elsevier (since January 2016 ~)
- ▶ Editorial Advisory Board: RRL Solar, Wiley (since January 2016 ~)
- ▶ Editorial Advisory Board: ACS Energy Letters, ACS (since Jun 2016 ~)
- ▶ Editorial Board: Nano-Micro Letters, SpringerOpen (since Jun 2016 ~)
- ▶ Editorial Advisory Board: Chemical Reviews, ACS (since October 2018 ~)

◆ Plenary and Invited Lectures

- 1 Invited talk at The 4th PCPM International Conference, NIMC, Tsukuba, Japan (March 14, 2000)
- 2 Invited talk at E-MRS Spring Meeting, Strasbourg, France (May 28, 2007)
- 3 Invited talk at NanoEurope 2007, St. Gallen, Swiss (September 11, 2007)
- 4 Invited Talk at The Northeastern Asia Symposium, Hiroshima, Japan (November 4, 2009)
- 5 Invited talk at ISEPD2010, Osaka, Japan (January 9-12, 2010)
- 6 Invited Talk at The 6th Workshop on Future Photovoltaics, Tokyo, Japan (March 1, 2010)
- 7 Invited Talk at ACS fall meeting, Boston, USA (August 24, 2010)
- 8 Invited Talk at POEM 2010, Wuhan, China (November 4, 2010)
- 9 Invited Talk at DSC-OPV6, Beppu, Japan (October 17, 2011)
- 10 Invited Talk at MRS Spring, San Francisco, USA (April 08, 2012)
- 11 Invited Talk at DSC-OPV7, Taiwan (October 26, 2012)
- 12 **Keynote Talk at ECS Fall, Hawaii, USA (October 08, 2012)**
- 13 Invited Talk at MRS Fall, Boston, USA (November 25, 2012)
- 14 Invited Talk at E-MRS Spring, Strasbourg, France (May 30, 2013)
- 15 Invited Talk at QuantumDot13, Granada, Spain (June 11, 2013)
- 16 **Keynote Talk at ORION International Summer School, Granada, Spain (June 10, 2013)**
- 17 Invited Talk at MRS-Singapore, Singapore (July 4, 2013)
- 18 Invited Talk at MRS-Fall, Boston, USA (December 5, 2013)
- 19 Invited Talk at The 10th Workshop on Future Photovoltaics, Tokyo, Japan (March 6, 2014)
- 20 Invited Talk at MRS-Spring, San Francisco, USA (April 24, 2014)
- 21 **Plenary Talk at HOPV14, Lausanne, Switzerland (May 13, 2014)**
- 22 Invited Talk at Gordon Research Conference, Hong Kong (June 23, 2014)
- 23 **Plenary Talk at IPS20, Berlin, Germany (July 29, 2014)**
- 24 Invited Talk at NanoGe, Oxford, UK (September 11, 2014)
- 25 **Plenary Talk at CPVC2014, Beijing, China (October 19, 2014)**
- 26 Invited Talk at WCPEC04, Kyoto, Japan (October 24, 2014)
- 27 Invited Talk at MRS-Fall, Boston, USA (December 1, 2014)
- 28 **Plenary Talk at DSC-OPV9, Sydney, Australia (December 8, 2014)**
- 29 **Plenary Talk at ICNME, Kobe, Japan (December 19, 2014)**
- 30 Invited Talk at MEMD, Hong Kong, (January 6, 2015)
Perovskite solar cell
- 31 Invited Talk at PV-EXPO, Tokyo, Japan (February 27, 2015)
High efficiency perovskite solar cell

- 32 Invited Talk at TMS, Orlando, USA (March 17, 2015)
The Next Big Thing in Photovoltaics: Perovskite Solar Cell
- 33 Invited Talk at MRS-Spring, San Francisco, USA (April 9, 2015)
High Efficiency Perovskite Solar Cells via Material and Device Engineering
- 34 Invited Talk at HOPV15, Rome, Italy (May 13, 2015)
Tailoring Low-dimensional CH₃NH₃PbI₃ Nanostructures for High Efficiency Perovskite Solar Cells
- 35 **Plenary Talk at POEM, Wuhan, China (June 17, 2015)**
Perovskite Solar Cell: Present and Future
- 36 Invited Talk at ICP2015 (27th International Conference on Photochem., Jeju, Korea (June 30, 2015)
Perovskite Solar Cell: From Material Science to Device Engineering
- 37 **Plenary Talk at UKC, Atlanta, USA (July 29, 2015)**
Perovskite Solar Cell: Strategies for Commercialization
- 38 Invited Talk at NanoGe, Santiago, Spain (September 11, 2015)
Highly Reproducible Perovskite Solar Cell with Efficiency Exceeding 20% via Adduct Chemistry
- 39 Invited Talk at 66th ISE, Taipei, Taiwan (October 5, 2015)
Methodologies for 20% Efficient Perovskite Solar Cells
- 40 Invited Talk at MRS Fall meeting, Boston, USA (December 1, 2015)
Highly Reproducible Hysteresis-Free Perovskite Solar Cell with Efficiency Exceeding 20% via Acid-Base Adduct Chemistry
- 41-43 Invited Talks (3 different sessions) at Pacificchem, Honolulu, Hawaii (December 17-19, 2015)
12/17, #344, Recent Progress in Organometal Halide Perovskite Solar Cells
12/18, #341, Interfacial Nanoengineering of Perovskite Solar Cells based on CH₃NH₃PbI₃ and HC(NH₂)₂PbI₃
12/19, #348, From 3D to 1D Nanostructured CH₃NH₃PbI₃ for High Efficiency Perovskite Solar Cells
- 44 Invited Talk at ISFM2015, OIST, Okinawa, Japan (January 26, 2016)
Adduct Approach and Grain Boundary Healing Process for Highly Efficient and Reproducible Organo Lead Iodide Perovskite Solar Cells
- 45 Invited Talk at The 12th Workshop on Future Photovoltaics, Tokyo, Japan (February 28, 2016)
Perovskite Solar Cell: Efficiency, Stability and Hysteresis
- 46 Invited Talk at Arizona State University, Phoenix, UAS (March 28, 2016)
How to Get to 20% Efficient Perovskite Solar Cells
- 47-48 Invited Talk (2 different sessions) at MRS-Spring, Phoenix, USA (March 29, 31, 2016)
3/29 Perovskite Solar Cell: Stability, Efficiency and I-V Hysteresis
3/31 Adduct Approach for High Efficiency Perovskite Solar Cells
- 49 **Plenary Talk at Nature Conference, Wuhan, China (June 14, 2016)**
Halide perovskite photovoltaics: a diamond in the rough
- 50 **Keynote Talk at IPS-21, St. Petersburg, Russia (July 25, 2016)**
Grain-Boundary Engineering for High Efficiency Perovskite Solar Cells
- 51 Invited Talk at Interfinish2016, Beijing, China (September 21, 2016)
Strategy for High Efficiency and Stable Perovskite Solar Cells
- 52 **Keynote Talk at 10th NHSC, Beijing, China (September 22, 2016)**
Grain-Boundary Engineering for High Efficiency Perovskite Solar Cells
- 53 Invited Talk at 5th SFSC, Dalian, China (October 14, 2016)
Non-stoichiometric Adduct Approach for High Efficiency Perovskite Solar Cells
- 54 Invited Talk at 1st NGSC, Hsinchu, Taiwan (November 21, 2016)
Multifunctional Organic-Inorganic Halide Perovskites
- 55 Invited Talk at MRS-Fall, Boston, USA (December 1, 2016)
Halide Perovskites: Highly Efficient PV and Beyond PV
- 56 Invited Talk at A-COE, Kyoto, Japan (December 7, 2016)
Non-stoichiometric Adduct Approach for Hysteresis-less, Stable, Highly efficient Perovskite Solar Cell
- 57 **Plenary Talk at AP-HOPV, Yokohama, Japan (February 4, 2017)**
Organic-Inorganic Halide Perovskites: Photovoltaics, LED and ReRAM
- 58 **Plenary Talk at MCARE, Jaeju, Korea (February 20, 2017)**
Organic-Inorganic Halide Perovskite: Photovoltaics and Optoelectronics
- 59 **Plenary Talk at HOPV17, Lausanne, Switzerland (May 22, 2017)**
Organic-Inorganic Halide Perovskites: From PV to ReRAM

- 60 Invited Talk at ICMAT2017, Singapore (June 19, 2017)
How to remove I-V hysteresis in perovskite solar cell
- 61 **Plenary Talk at SPIE, San Diego, USA (August 8, 2017)**
The History and Progress of Halide Perovskite Photovoltaics
- 62 **Keynote Talk at IUMRS-ICAM, Kyoto, Japan (August 29, 2017)**
Organic-Inorganic Halide Perovskite Covering from PV to Memristor
- 63 Invited Talk at PSCO-17, Oxford, UK (Sept 18, 2017)
Impact of Interfacial Engineering in Perovskite Solar Cells
- 64 **Plenary Talk at PVSEC-27, Otsu, Japan (Nov. 15, 2017)**
21st century disruptive technology: perovskite solar cell
- 65 **Plenary Talk at 1st International Conference on Energy Storage Materials (ENSM 2017), Shenzhen, China (Nov. 19, 2017)**
Perovskite Solar Cell
- 66 Invited Talk at MRS Fall Meeting, Boston, USA (Nov. 29, 2017)
Impacts of Interfacial and Interstitial Engineering in Perovskite Solar Cells
- 67 **Plenary Talk at Symposium-X in MRS Fall Meeting, Boston, USA (Nov. 30, 2017)**
History, progress, and perspective of perovskite solar cell
- 68 Invited Talk at ICEST2018, OIST, Okinawa, Japan (January 22, 2018)
Toward Hysteresis-free Perovskite Solar Cells and beyond PV
- 69 **Plenary Talk at AP-HOPV, Kitakyushu, Japan (Jan. 29, 2018)**
Perovskite solar cell and X-ray imaging
- 70 **Plenary Talk at SEPV2018, Barcelona, Spain (Feb. 20, 2018)**
Toward Hysteresis-free and Stable Perovskite Solar Cells
- 71-72 Invited Talk at MRS spring meeting, Phoenix, USA (April 1, 2018)
Resolving Issues in Perovskite Solar Cells (EN02) and Large-area coating technology for high efficiency perovskite solar cells (EN15)
- 73 Invited Talk at Gordon Research Conference (GRC), Hong Kong (June 10, 2018)
Disruptive Technology in Photovoltaics
- 74 **Keynote Talk at IPS-22, Hefei, China (July 30, 2018)**
Large-area, stable, hysteresis-free high efficiency perovskite solar cell
- 75 Invited Talk at E-MRS, Warsaw, Poland (September 18, 2018)
Toward large-area high efficiency perovskite solar cells
- 76 **Plenary Talk at Asia Nano, Qingdao, China (October 19, 2018)**
Organic-Inorganic Halide Perovskite for Photovoltaics and Opto-Electronics
- 77 **Keynote Talk at MRS Fall Meeting, Boston (November 27, 2018)**
Perovskite photovoltaics: history, Progress and Perspective
- 78 **Plenary Talk at NHSC12, Shenzhen, China (December 17, 2018)**
Bi-facial Stamping Approach for Low-temperature Phase Transition of FAPbI₃ and High Efficiency MAPbI₃
- 79 **Plenary Talk at 20th ISEPD, Sumoon Univ., Korea (Jan 5, 2019)**
Perovskite Photovoltaics: History, Progress and Perspective
- 80 Invited Talk at NIPHO-NanoGe, Jerusalem, Israel (Feb. 26, 2019)
D-bar Coating and Bi-facial Stamping Approaches for Scalable Perovskite Solar Cells
- 81 **Keynote Talk at MRS Spring Meeting, Phoenix (April 23, 2019)**
Issues and solutions in perovskite solar cells
- 82 Invited Talk at ICMAT, Singapore (June 24, 2019)
Research Direction toward Scalable, Stable, High Efficiency Perovskite Solar Cell
- 83 **Plenary Talk at MC14, Birmingham, UK (July 11, 2019)**
Interfacial Engineering and Scalable Technologies in Perovskite Solar Cells
- 84 **Keynote Talk at META 2019, Lisbon, Portugal (July 25, 2019)**
Organic-inorganic Lead Halide Perovskite for High Efficiency Energy Conversion
- 85 **Plenary Talk at IUMRS-ICA 2019, Perth, Australia (September 24, 2019)**
Perovskite Solar Cell: The Viable Alternative to Fossil Fuel
- 86 **Plenary Talk at ACEPS10-2019, Kaoshung, Taiwan (November 25, 2019)**
High Efficiency, Stable, Large-area Perovskite Solar Cells
- 87 Invited Talk at MRS Fall Meeting, Boston, USA (Dec. 2, 2019)
Materials and Processing for Scalable Perovskite Solar Cells

88 Keynote Talk at MRM 2019, Yokohama, Japan (Dec. 13, 2019)

Perovskite Solar Cells: History, Progress and Perspective