

# **Jung, Sang-Don, Ph. D.**

## **Current Position**

Principal Member of Research Staff  
Brain & Human Interface Research Section  
ICT Creative Research Division  
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## **Major Fields**

(Current)

Neural interface technology  
Neuromorphic engineering

(Past)

Organic & Polymeric Light Emitting Devices  
Polymer-based Gradient-index Lenses  
Polymeric Electro-optic Modulator  
Langmuir-Blodgett Films  
Nanobiosensing

## **Education**

Seoul National University, Seoul, Korea  
Ph.D., Chemical Engineering, August 1993  
M.S., Chemical Engineering, February 1986  
Soongsil University, Seoul, Korea  
B.S., Chemical Engineering, February 1984

## **Work Experiences**

Electronics & Telecommunications Research Institute (**1989-present**)

## **Honors and Awards**

ISI Citation Classic Awards (2000)

## **Memberships**

Korean Polymer Society  
Korean Chemistry Society

## List of Publications

54. Dae. Lee, Hyeong Chel Moon, Tran Bao Tram, Dae-Hyuk Kwon, Yong Hee Kim, **Sang-Don Jung**, Jong Hoon Joo and Young Seok Park, "Characterization of Tetraods Coated with Au Nanoparticles (AuNPs) and PEDOT and Their Application to Thalamic Neural Signal Detection in vivo", *Experimental Neurobiology* (2018).
53. Yong Hee Kim, Ho Koo, Min Sun Kim, **Sang-Don Jung\***, "Iridium Oxides on Indium-Tin Oxide Nanowires: An All Metal Oxide Heterostructured Multielectrode Array for Neuronal Interfacing", *Sensors & Actuators B-Chemical*, Vol. 273, 718-725 (2018).
52. Ying Hee Kim, Jongkil Park, Ho Koo, Min Sun Kim, **Sang-Don Jung\***, Fluoropolymer-based flexible neural prosthetic electrodes for reliable neural interfacing, *ACS Applied Materials Interfaces*, Vol. 9, 43420-43428 (2017).
51. Jongkil Park, Gookhwa Kim, **Sang-Don Jung**, A 128 channel FPGA-based Real Time Spike Sorting Bidirectional Closed-loop Neural Interface System, *IEEE Transactions on Neural Systems Rehabilitation Engineering*, Vol. 25, 2227-2238 (2017).
50. Du Won Jeong, Gook Hwa Kim, Na Yeon Kim, Zonghoon Lee, **Sang-Don Jung\*** and Jeong-O Lee, High-performance transparent graphene-vertically aligned carbon nanotubes (VACNTs) hybrid electrode for neural interface, *RSC Advances*, Vol. 7, 3273 (2017).
49. Yong Hee Kim, Gook Hwa Kim, Min Sun Kim, **Sang-Don Jung\***, Iridium Oxide-Electrodeposited Nanoporous Gold Multielectrode Array with Enhanced Stimulus Efficacy, *Nano Lett.*, Vol. 16, 7163-7168 (2016).
48. Yong Hee Kim, Ah young Kim, Gook Hwa Kim, Young Hwan Han, Myung-Ae Chung and **Sang-Don Jung\***, Electrochemical and in vitro Neuronal Recording Characteristics of Multi-Electrode Arrays Surface-Modified with Electro-co-Deposited Gold-Platinum Nanoparticles, *Biomedical Microdevices*, Vol. 18, 1-7 (2016).
47. Yong Hee Kim, Gook Hwa Kim, Ah Young Kim, Young Hwan Han, Myung-Ae Chung and **Sang-Don Jung\***, In Vitro Extracellular Recording and Stimulation Performance of Nanoporous Gold-Modified Multi-Electrode Arrays, *Journal of Neural Engineering*, Vol. 12, 66029 (2015).
46. Du Won Jeong, Jongjin Jung, Gook Hwa Kim, Cheol-Soo Yang, Ju Jin Kim, **Sang-Don Jung** and Jeong-O Lee, Performance assessments of vertically aligned carbon nanotubes multi-electrode arrays using Cath.a-differentiated (CAD) cells, *Nanotechnology*, Vol. 26, 335701 (2015).
45. C. J. Raj, B. C. Kim, W.-J. Cho, W. Lee, **S.-D. Jung**, Y. H. Kim, S. Y. Park and K. H. Yu, Highly flexible and plana
44. Y. H. Kim, G. H. Kim, A.-Y. Kim, N. S. Baek, J. I. Jeong, Y. H. Han, B. C. Shin, M.-A. Chung and **S.-D. Jung\***, Optimisation of bi-layer resist overhang structure formation and SiO<sub>2</sub> sputter-deposition process for fabrication of gold multi-electrode array, *RSC Advances*, Vol. 5, 6675-6681 (2015).
43. Yong Hee Kim, **Sang-Don Jung\***, Myung Hee Lee, Chan Im, Yun-Hwa Kim, Yoon Jung Jang, Seog K. Kim, Dae Won Cho, Photoinduced Reduction of Manganese(III) meso-Tetrakis(1-methylpyridinium-4-yl)porphyrin at AT and GC Base Pairs, *The Journal of Physical Chemistry B*, Vol. 117, 9585-9590 (2013).
42. Yong Hee Kim, **Sang-Don Jung**, Yoon Jung Jang, Chan Im, Seog K. Kim, Dae Won Cho, Charge Interactions of Water Soluble Oxo-titanium(IV) porphyrins with CTAC and SDS Micelles, *Journal of Photochemistry and Photobiology A: Chemistry*, Vol. 270, 7-13 (2013).
41. Yong Hee Kim, Gook Hwa Kim, Nam Seob Baek, Young Hwan Han, Ah-Young Kim, Myung-Ae Chung and **Sang-Don Jung\***, Fabrication of multi-electrode array platforms for neuronal interfacing with bi-layer lift-off resist sputter deposition, *Journal of Micromechanics & Microengineering*, Vol. 23, 97001 (2013).
40. Nam Seob Baek, Yong Hee Kim, Young Hwan Han, Andreas Offenhäusser, Myung-Ae Chung, **Sang-Don Jung\***, Fine neurite patterns from photocrosslinking of cell-repellent benzophenone copolymer, *Journal of Neuroscience Methods*, Vol. 210, 161-168 (2012).
39. Yong Hee Kim, Nam Seob Baek, Kook Hwa Kim, **Sang-Don Jung\***, Simplifying patterning process of ZnO nanowires by one step development and etching process, *J. Sol-Gel Sci. Technol.*, Vol. 64, 304-308 (2012).
38. Yong Hee Kim, Nam Seob Baek, Young Hwan Han, Myung-Ae Chung, **Sang-Don Jung\***, Enhancement of neuronal cell adhesion by covalent binding of poly-d-lysine, *Journal of Neuroscience Methods*, Vol. 202, 38-44 (2012).
37. Nam Seob Baek, Ji-Hyun Lee, Yong Hee Kim, Bong Joon Lee, Gook Hwa Kim, Ik-Hyun Kim, Myung-Ae Chung, and **Sang-Don Jung\***, Photopatterning of Cell-Adhesive-Modified Poly(ethyleneimine) for Guided Neuronal Growth, *Langmuir*, Vol. 27, 2717-2722 (2011).
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35. Sunjong Oh, Nam Seob Baek, **Sang-Don Jung**, Myung-Ae Chung, Tran Quang Hung, S. Anandakumar, V. Sudha Rani, Jong-Ryul Jeong, and CheolGi Kim, Selective Binding and Detection of Magnetic Labels Using PHR Sensor via Photoresist Micro-Wells, *Journal of Nanoscience and Nanotechnology*, Vol. 11, 4452-4456 (2011).
  34. Yong Hee Kim, Soo-Gyun Roh, **Sang-Don Jung**, Myung-Ae Chung, Hwan Kyu Kim and Dae Won Cho, Excited-state intramolecular proton transfer on 2-(2'-hydroxy-4'-Rphenyl) benzothiazole nanoparticles and fluorescence wavelength depending on substituent and temperature, *Photochemical & Photobiological Sciences*, Vol. 9, 722-729 (2010).
  33. Jeong Dae Suh, **Sang-Don Jung**, Myung-Ae Chung, Spin valve ring sensors for superparamagnetic bead detectors, *IEEE Transactions on Magnetics*, Vol. 45, 2730-2732 (2009).
  32. Seung-Min Yoo, Ae-Kyung Ahn, Taegun Seo, Hyo Bing Hing, Myung-Ae Chung, **Sang-Don Jung**, Haewol Cho, Myung-Shin Lee, Centrifugal enhancement of Kaposi's sarcoma-associated virus infection of human endothelial cells in vitro, *J. Virological Methods*, Vol. 154, 160-166 (2008).
  31. Yong Hee Kim, **Sang-Don Jung**, Myung-Ae Chung, Ki Dong Song, Dae Won Cho, Photoinduced charge-transfer association of tetracyanoquinodimethane with aminobiphenyls, *Bulletin Korean Chemica Society*, Vol. 5, 29 (2008).
  30. Seon-Jeong Lim, Dae Young Seok, Byeong-Kwan An, **Sang Don Jung**, and Soo Young Park, "A Modified Strategy for the Synthesis of Hyperbranched Poly(*p*-phenylenevinylene): Achieving Extended  $\delta$ -Conjugation with Growing Molecular Weight", *Macromolecules*, Vol. 39, 9-11 (2006).
  29. Seon-Jeong Lim, Byeong-Kwan An, **Sang Don Jung**, Myung-Ae Chung, and Soo Young Park, Photoswitchable Organic Nanoparticles and a Polymer Film Employing Multifunctional Molecules with Enhanced Fluorescence Emission and Bistable Photochromism, *Angew. Chem. Int. Ed.*, Vol. 43, 6346-6350 (2004).
  28. Byeong-Kwan An, Soon-Ki Kwon, **Sang-Don Jung** and Soo Young Park, "Emission and its switching in fluorescent organic nanoparticles", *J. of the American Chemical Society*, Vol. 124, 48 (2002).
  27. Myung-Ae Chung, Kwangsup Lee, and **Sang-Don Jung\***, "Two-photon Absorption Cross Sections of Dithienothiophene-based Molecules", *ETRI Journal*, Vol. 24, 221-225 (2002).
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  24. Taehyoung Zyung, **Sang-Don Jung**, Do-Hoon Hwang, "Effects of thermal annealing on the performance of polymeric light emitting devices", *Synthetic Metals*, Vol. 117, 223-225 (2001).
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  21. **S.-D. Jung\***, T. Zyung, W. Kim, C. J. Lee, S. K. Tripathy, "Change in the emission color and the quantum efficiency enhancement in urethane-substituted polythiophene/tris(8-hydroxyquinoline) aluminum double layer light-emitting devices", *Synthetic Metals*, Vol. 100, 223-231 (1999).
  20. **S.-D. Jung\***, D. H. Hwang, T. Zyung, W. Kim, K. G. Chittibabu, S. K. Tripathy, "Temperature dependent photoluminescence and electroluminescence properties of polythiophene with hydrogen bonding side chain", *Synthetic Metals*, Vol. 98, 107-111 (1998).
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  18. Do-Hoon Hwang, Kang-Hoon Choi, Hyang-Mok Lee, Lee-Mi Do, **Sang-Don Jung**, Hong-Ku Shim, A. B. Holmes and Taehyoung Zyung, "Electroluminescent Properties of Novel Silyl-disubstituted Soluble PPV Derivative", *Mol. Cryst. Liq. Cryst.*, Vol. 316, 281-284 (1998).
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  16. Hong Ku Shim, In Nam Kang, Min Sik Jang, Taehyoung Zyung and **Sang Don Jung**, "Electroluminescence of polymer blend composed of conjugated and nonconjugated polymers. White-light-emitting diode", *Macromolecules*, Vol. 30, 7749-7752 (1997).

15. Min-Sik Jang, Seung-Yong Song, Kong-Ku Shim, Taehyoung Zyung, **Sang-Don Jung**, Lee-Mi Do, "The enhancement of electroluminescence efficiency by molecular doping", *Synthetic Metals*, Vol. 91, 317-319 (1997).
14. Lee-Mi Do, Kang-Hoon Choi, Hyang-Mok Lee, Do-Hoon Hwang, **Sang-Don Jung**, Hong-Ku Shim and Taehyoung Zyung, "Degradation progress in polymeric electroluminescent devices", *Synthetic Metals*, Vol. 91, 121-122 (1997).
13. T. Zyung, **S.-D. Jung**, M.-S. Jang and H.-K. Shim, "Electroluminescence of photodegraded Poly(p-phenylenevinylene) derivatives by ultraviolet light", *Mol. Cryst. Liq. Cryst.* Vol. 295, 23-26 (1997).
12. Y.-E. Kim, **S.-D. Jung**, H. Park, W.-Y. Hwang, T. Zyung, H.-S. Shin, I.-N. Kang, H.-K. Shim and J.-J. Kim, "PMMA Langmuir-Blodgett films in a polymer light emitting diode to improve quantum efficiency", *Mol. Cryst. Liq. Cryst.*, Vol. 294, 123-126 (1996).
11. Young Kwan Kim, Mi Hwa Sohn, Byoung Chung Sohn, Engene Kim and **Sang Don Jung**, "Transfer characteristics of Langmuir Films of polymethacrylate with various side Chains", *Thin Solid Films*, Vol. 284-285, 53-55 (1996).
10. Taehyoung Zyung and **Sang-Don Jung**, "Electroluminescent devices using a polymer of regulated conjugation length and a polymer blend" *ETRI J.* Vol. 18(3), 195 (1996).
9. J.-J. Kim, **S.-D. Jung** and W.-Y. Hwang, "Molecular configuration and application of stereoregular PMMA Langmuir-Blodgett films", *ETRI J.*, Vol. 18(3), 195-206 (1996).
8. B. Lee, J. H. Baek, J. H. Lee, S. W. Choi, **S. D. Jung**, W. S. Han and E.-H. Lee, "Optical properties of InGaAs linear graded buffer layers on GaAs grown by metalorganic chemical vapor deposition", *Appl. Phys. Lett.*, Vol. 68, 2973 (1996).
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4. T. Zyung, J.-J. Kim, W.-Y. Hwang and **S.-D. Jung**, "Effects of photobleaching wavelength on the resulting refractive index profiles in nonlinear optical polymeric thin films", *Mol. Cryst. Liq. Cryst.*, Vol. 247, 49-58 (1994).
3. **S. D. Jung**, J.-J. Kim, W.-Y. Hwang and T. Zyung, "Transfer characteristics of Langmuir-Blodgett films of stereoregular poly(methyl methacrylate)", *Mol. Cryst. Liq. Cryst.*, Vol. 247, 281-291 (1994).
2. J.-S. Ha, H.-S. Roh, **S.-D. Jung**, S.-J. Park and E. H. Lee, "Structural Study of a Poly (methylmethacrylate) Langmuir-Blodgett Film on a Graphite Surface by Scanning Tunneling Microscopy", *J. Vac. Sci. Technol. B*, Vol. 12, 1977-1980 (1994).
1. J.-J. Kim, **S.-D. Jung**, H.-S. Roh, J.-S. Ha, "Molecular configuration of isotactic PMMA LB films observed by STM", *Thin Solid Films*, Vol. 244, 700-704 (1994).