CURRICULUM VITAE

Ly James Lee
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Research Areas: Polymers and Composites; Nanomaterials; Biotechnology

EDUCATION

B.S. in Chemical Engineering	National Taiwan University, June 1972
Graduate Research Associate	Case Western Reserve University, 1974-75 Macromolecular Science Department
Ph.D. in Chemical Engineering	The University of Minnesota, January 1979

ACADEMIC EXPERIENCE

2000-present	Helen C. Kurtz Chair, The Ohio State University
1990-2000	Professor, Chemical Engineering, The Ohio State University
1986-90	Associate Professor, Chemical Engineering, The Ohio State University
1982-86	Assistant Professor, Chemical Engineering, The Ohio State University

INDUSTRIAL AND GOVERNMENTAL EXPERIENCE

1979-82	Senior Research Engineer,
1979-82	Research Scientist, 5/82-7/82 The General Tire & Rubber Company (GenCorp), Akron, Ohio
June-Sept. 1988	Structural Materials Branch -Air Force Wright Patterson

AWARDS AND HONORS

2016	Lifetime Achievement Award, Society of Advanced Molding Technology
2012	OSU, College of Engineering Research Award
2010	International Award, Society of Plastics Engineers
2010	OSU, College of Engineering Lumley Interdisciplinary Research Award
2008	Engineering/Technology Award, Society of Plastics Engineers
2008	Malcolm E. Pruitt Award, Council of Chemical Research
2006	Fellow, American Institute for Medical and Biological Engineering
2005	OSU, College of Engineering Research Award
2002	Finalist, Frank Annunzio Award, Christopher Columbus Fellowship Foundation
2002	OSU, College of Engineering Scott Senior Faculty Award
2002	OSU, College of Engineering Lumley Interdisciplinary Research Award
2001	Fellow, Society of Plastics Engineers
2000	OSU Technology Partnership Alliance Award
2000	OSU Distinguished Scholar Award
2000	OSU, College of Engineering Annual Research Accomplishment Award

1997	East China University of Science and Technology, Honorary Professorship
1996	OSU, College of Engineering Annual Research Accomplishment Award
1995	OSU, College of Engineering Research Award
1991	OSU, College of Engineering Research Award
1989	OSU, College of Engineering Harrison Faculty Award for
1988	OSU, College of Engineering Research Award
1987	Central Ohio AIChE Section, Innovation in Chemical Engineering
1986-2011	15 Best Paper Awards in Society of Plastics Engineers, Society of Plastics Industry and American Association of Pharmaceutical Scientists Annual Conferences
1985	OSU, College of Engineering Research Award
1983-86	Amoco Foundation Young Faculty Development Award
1982	Rohm & Haas Young Faculty Award

PROFESSIONAL ORGANIZATIONS

AIChE
American Chemical Society
Polymer Processing Society
Society of Plastics Engineers
American Institute for Medical and Biological Engineering

MAJOR ADMINISTRATIVE ACTIVITIES IN THE OHIO STATE UNIVERSITY

1987-97	Coordinator of Polymer and Composite Processing Thrust Area, NSF Engineering Research Center for Net Shape Manufacturing
1993	Chair of Department Chair Search Committee
1994-96	Vice Chair of Department, Chair of Graduate Studies Committee, Department of Chemical Engineering
1997-2004	Director of NSF Industry/University Cooperative Research Center for Advanced Polymer and Composite Engineering (CAPCE)
2002-2011	Director of NSF Integrated Graduate Education and Research Training (IGERT) Program on Molecular Engineering of Micro-Devices
2004-2015	Director of NSF Nanoscale Science and Engineering Center for Affordable Nanoengineering of Polymeric Biomedical Devices (CANPBD)
2005-2012	Director of Ohio Center for Multifunctional Polymer Nanomaterials and Devices (CMPND)

PROFESSIONAL ACTIVITIES

1990	Organizer and Chairman, Symposium on Reactive Processing and Functional Polymers, International IUPAC Symposia on Macromolecules, Montreal, Canada
1991	Chair of Technical Program Committee: Engineering Properties and Structure Division, the Society of Plastics Engineers
1991-98	Session Co-Chair, AIChE Annual Meetings
1991- present	Editorial Board, Journal of International Polymer Processing
1992- present	Editorial Board, Science and Engineering of Composite Material Journal
1992	Session Organizer and Chairman, Polymer Processing Society Meeting for the Americas, Knoxville, TN
1994	Session Organizer and Chairman, 10th Int. Polymer Processing Society

	Conference, Akron, OH
1996	Technical Program Chair of AIChE Group 8f
1996	Organizer of 2nd Workshop on Liquid Composite Molding, Columbus, OH
1996-98	Member of Board of Trustees, Edison Polymer Innovation Corporation
2000-present	Editorial Board, Journal of Composite Materials
2001-present	Member of Board of Trustees, PolymerOhio
2004	Co-Editor of the volume "Biomedical and Biological Nanotechnology" in the Kluwer Series of "BioMEMS and Biomedical Nanotechnology"
2004-present	Editorial Board, Advances in Polymer Technology
2004-05	Founder and co-Founder of two high-tech companies, BioLOC and Nanomaterial Innovation Ltd. (NIL)
2005-present	Editorial Board, Composite Science and Technology
2005	Chair, Polymer Analysis Division Founder's Award Committee, the Society of Plastics Engineers
2012-present	Editorial Board, Biomicrofluidics
2013-present	International Advisory Board, Shenhua/National Institute of Carbon Energy in China

REFEREED JOURNAL ARTICLES (>400 papers with >12,000 citations)
Represented 20 papers:

1. C. Zeng, X. Han, **L.J. Lee**, K.W. Koelling and D.L. Tomasko "Polymer/Clay Nanocomposite Foams Prepared Using CO_2", Advanced Materials, 15(20), 1743-1747 (2003).
2. Y-J. Juang, S. Wang, X. Hu and **L.J. Lee**, "Dynamics of Single Polymers in a Stagnation Flow Induced by Electrokinetics", Physical Review Letters, 93, 268105 (2004).
3. S. Wang, C. Zeng, S. Lai, Y.J. Juang, Y. Yang and **L.J. Lee**, "Polymeric Nanonozzle Array Fabricated by Sacrificial Template Imprinting", Advanced Materials, 17, 1182-1186 (2005).
4. J. Guan and **L. J. Lee**, "Generating Highly Ordered DNA Nanostrand Arrays", Proceedings of National Academy of Science, 102(51), 18321-18325 (2005).
5. Y. Yang, Y. Xie, X. Kang, **L.J. Lee** and D.A. Kniss, "Assembly of Three-dimensional Polymeric Constructs Containing Cells/Biomolecules Using Carbon Dioxide ", Journal of American Chemical Society, 128(43), 14040-14041 (2006).
6. Y. Yang, D. Liu, **L.J. Lee**, and D.L. Tomasko, "Low Temperature Fusion of Polymeric Nanostructures Using Carbon Dioxide", Advanced Materials, 19(2), 251-254 (2007).
7. S. Wang and **L.J. Lee**, "Dynamic Assembly by Electrokinetic Microfluidics", Journal of American Chemical Society, 129(2), 254-255 (2007).
8. J. Guan, B. Yu and **L.J. Lee**, "Forming Highly Ordered Arrays of Functionalized Polymer Nanowires by Dewetting on Micropillars", Advanced Materials, 19, 1212-1217 (2007).
9. N-R Chiou, C. Lu, J. Guan, **L.J. Lee** and A.J. Epstein, "Growth and Alignment of Polyaniline Nanofibres with Superhydrophobic, Superhydrophilic and Other Properties", Nature Nanotechnology, 2, 354-357 (2007).
10. P. Boukany, O. Hemminger, S-Q Wang and **L.J. Lee**, "Molecular Imaging of Slip in Entangled DNA Solution", Physical Review Letters, 105(2), 027802 (2010).
11. J. Guan, P.E. Boukany, O. Hemminger, N-R Chiou, W. Zha, M. Cavanaugh and **L.J. Lee**, "Large Laterally Ordered Nanochannel Arrays from DNA Combing and Imprinting", Advanced Materials, 22, 3997-4001 (2010).
12. P. E. Boukany, A. Morss, W-C Liao, B. Henslee, H.C. Jung, X. Zhang, B. Yu, X. Wang, Y. Wu, L. Li, K. Gao, X. Hu, X. Zhao, O. Hemminger, W. Lu, G. Lafyatis and **L.J. Lee**,

"Nanochannel Electroporation Delivers Precise Amounts of Biomolecules into Living Cells ", Nature Nanotechnology, 6, 747-754 (2011)
13. Y. Wu, L. Li, Y. Mao and **L.J. Lee**, "Static Micromixer - Coaxial Electrospray Synthesis of Theranostic Lipoplexes", ACS Nano, 6(3), 2245-2252 (2012).
14. W. Huang, J. Yu, K.J. Kwak, D. Gallego-Perez, W.C. Liao, L. Li, H. Yang., X. Ouyang, W. Lu, G. Lafyatis and **L.J. Lee**, "Atomic Carbide Bonding Leads to Superior Graphene Networks", Advanced Materials, 25, 4668-4672 (2013).
15. B. Yu, Y. Mao, L. Bai, S. May, A. Ramanunni, Y. Jin, X. Mo, C. Carolyn, K.K. Chan, D. Jarjoura, G. Marcucci, R.J. Lee, J.C. Byrd, **L.J. Lee** and N. Muthusamy, "Liposomal Targeted Delivery Overcomes Off-target Immunostimulatory Effects of RNA Oligonucleotide", Blood, 121, 136-147 (2013).
16. S-H Kim, R. Ezhilarasan, R. Chhipa, J. Wang, E. Phillips, A. Sparks, D. Taylor, D. Gallego-Perez, E.P. Sulman, V. Goidts, **L.J. Lee,** D. Guttridge, B. DasGupta, K. Bhat, J. Walker and I. Nakano, "Serine/Threonine Kinase MLK4 Determines Mesenchymal Identity in Glioma Stem Cells in an NF-kB-dependent Manner", Cancer Cell, 29, 201-213 (2016).
17. **L.J. Lee**, Z. Yang, M. Rahman, J. Ma, K.J. Kwak, J. McElory, K. Shilo, C. Goparaju, L. Yu, W. Rom, T-K Kim, X. Wu, Y. He, K. Wang, H.I. Pass and S.P. Nana-Sinkam, "Extracellular mRNA Detected by Tethered Lipoplex Nanoparticle Biochip for Biomarker Development in Lung Cancer", American Journal of Respiratory and Critical Care Medicine, 193(12), 1431-1433 (2016).
18. D. Gallego-Perez, L. Chiang, J. Shih, J. Ma, S. Kim, X. Zhao, X. Wang, P. Mao, K.J. Kwak, Y. Wu, L. Wu, G. Lafyatis, D.J. Hansford, I. Nakano, and **L.J. Lee**, "On-chip Clonal Analysis of Oligo RNAs on Glioma Stem Cell Motility and Drug Resistance", Nano Letters, 16(9), 5326-5332 (2016).
19. D. Gallego-Perez, D. Pal, S. Ghatak, V. Malkoc, S. Gnyawali, L. Chang, W-C Liao, J. Shi, M. Sinha1, E. Steen, A. Sunyecz, R. Stewart, M. Homsy, W. Lu, S. Khanna, C. Rink, J. Otero**, L.J. Lee** and C.K. Sen, "Topical Tissue Nano-transfection Mediates Non-viral Stroma Reprogramming and Rescue", Nature Nanotechnology, DOI:10.1038 /NNANO2017.134 (2017).
20. J. Hu, Y. Sheng, K.J. Kwak and **L.J. Lee**, "A Signal-amplifiable Biochip Quantifies Extracellular RNAs for Early Cancer Detection", Nature Communication, DOI: 10.1038/s41467-017-01942 (2017).

BOOK CHAPTERS (15)
PROCEEDING PAPERS (>350)
PRESENTATIONS (>500)
PATENTS AND PATENT APPLICATIONS (18 issued and 15 applications)

EXTERNAL RESEARCH GRANTS (>$110 million)
On-going
NIH U01 CA213330 **(MPI:** Nana-Sinkam/**Lee)** 03/20/2017-03/19/2022
Extracellular vesicles in small cell lung cancer early detection
This project proposes to develop and validate extracellular vesicles based biomarkers for SCLC detection using the TLN biochips.
$2.75M

NIH R01 CA190740-02 **(Co-I: Lee with MPI:** Croce/Nana-Sinkam**)** 08/01/2015-07/31/2020
Molecular Mechanisms of Cachexia in Lung Cancer

$1.8M

NIH R33 CA225380-01 **(MPI: Lee**/Fleisher**)** 09/30/2017-09/30/2020
Molecular Beacon Based Extracellular mRNA and Protein Detection for Early Cancer Diagnosis
$1.6M

NIH R21 NS099869 **(Co-I: Lee with PI:** Gallego-Perez**)** 09/01/2016-08/31/2018
Nanotechnology-based Non-viral Derivation of Induced Endothelium for Ischemic Disorders
$422,500

Ohio Third Frontier Program (MPI: **Lee**/Castro) 12/01/2014-03/31/2018
Carbon Nanomaterials and Composites Platform $2.2M

Center for Advanced Polymer and Composite Engineering (MPI: **Lee**/Castro) 10/01/1997-present $35,000/yr. industrial membership fees for each company member

Recently Completed

NIH R21 EB017539 **(MPI: Lee/**Otero**)** 08/01/2013-07/31/2016
Large scale of nanochannel electroporation (NEP) for cell reprogramming

NIH R21 CA179403 **(MPI: Lee/**Nana-Sinkam**)** 09/17/2013-08/31/2016
Plasma RNA based early lung cancer detection by tethered cationic lipoplex assay

NIH R21 CA185707 **(MPI: Lee**/Ghoshal/Schmidt**)** 04/01/2014-03/31/2016
Tethered cationic lipoplex nanoparticle assay for liver cancer detection and surveillance

NIH R21 CA152969 **(MPI: Lee**/Ghoshal/Jacob/Lee R) 03/01/2011-02/28/2013
Delivery of Anti-miR Oligos in Lipid Nanoparticles to Hepatocellular Cancer

NSF EEC-0914790 **(PI: Lee)** 09/01/2009-09/31/2015
NSF Div. of Engineering, Education, and Centers

PHD DEGREES (70 completed)
POSTDOCTORAL FELLOWS/VISITING SCHOLARS (100 completed)
CURRENT (4 PhD students, 7 postdocs/research associates, 2 visiting PhD student)