Seed IP

Shi (Michelle) Liu, Ph.D.

SENIOR ASSOCIATE

EDUCATION

University of Washington School of Law
J.D. 2011

University of Washington
Materials Science & Engineering/ Nanotechnology
Ph.D. 2003

Northeastern University
Organic Chemistry
M.S. 1999

Jilin University
Polymer Chemistry & Physics
M.S. 1995

Sichuan University
Polymer Chemistry
B.S. 1992

INDUSTRIES

Alternative Energy
Biotechnology
Chemistry
Semiconductors
Medical Devices
Nanotechnology
Pharmaceuticals

PRACTICES

Patent
Strategic Counseling
Trade Secrets

BAR ADMISSIONS

Washington
United States Patent and Trademark Office

BACKGROUND

Michelle's practice is focused on patent procurement, licensing and strategic intellectual property portfolio management in electrical and chemical matters. Example areas of expertise include semiconductors, materials science, batteries, electronics, optoelectronics, medical devices, nanotechnology, polymers, organic chemistry, pharmaceuticals, and cosmetics. Michelle has successfully drafted and prosecuted numerous patent applications of U.S. and international patent matters for clients ranging from small startups to large international corporations. She received a B.S. in Polymer Chemistry from Sichuan University (1992), a M.S. in Polymer Chemistry and Physics from Jilin University (1995), a second M.S. in Organic Chemistry from Northeastern University (1999), and a Ph.D. in Materials Science & Engineering/ Nanotechnology from University of Washington (2003). Michelle holds a J.D. from University of Washington School of Law (2011).

EXPERIENCE

Michelle's background includes nearly a decade of experience as an associate at several IP boutique firms across the U.S., including Seattle, Garden City, NY, and Alexandria, VA. Prior to practicing law, Michelle worked as a researcher in both academic and industrial labs responsible for developing cutting-edge functional materials for organic light-emitting diodes and photovoltaics.

Michelle has written or co-written numerous publications that were published in peer-reviewed journals, and has presented at many science-based industry conferences. Michelle is fluent in Mandarin Chinese.

AFFILIATIONS

Michelle is admitted to the Washington State Bar and is registered to practice before the U.S. Patent and Trademark Office.

Shi (Michelle) Liu, Ph.D.

SENIOR ASSOCIATE

SELECTED PUBLICATIONS

A. K.-Y., Jen, M. S. Liu, Y.-H. Niu, "Crosslinkable Hole-Transporting Materials for Organic Light-Emitting Devices", US 8,343,6 36.

M. S. Liu, Y.-H. Niu, J.-W. Ka, H.-L. Yip, J. D. Luo, T.-D. Kim, F. Huang, A. K.-Y. Jen, "Thermally Crosslinkable Hole-Transporting Materials for Improving Hole-Injection in Multilayer Blue-Emitting Phosphorescent Polymer Light-Emitting Diodes", *Macromolecules* 41, 9570 (2008).

M. S. Liu, Y.-H. Niu, J. D. Luo, B. Q. Chen, T.-D. Kim, J. Bardecker, A. K.-Y. Jen, et al. "Material and Interface Engineering for Highly Efficient Polymer Light Emitting Diodes", J. *Macromolecular Sci., Poly. Rev.* 46, 7 (2006).

M. S. Liu, Y.-H. Niu, J.-W. Ka, H.-L. Yip, B. Q. Chen, F. Huang, Y.-J. Cheng, T.-D. Kim, A. K.-Y. Jen, et al. "Highly Efficient Blue Electrophosphorescent Polymer Light-Emitting Diodes Using Multiple Hole Transporting Layers", *Polymer Preprints* 47(2), 1008 (2006).

M. S. Liu, Y.-H. Niu, J.-W. Ka, H.-L. Yip, B. Q. Chen, F. Huang, Y.-J. Cheng, T.-D. Kim, A. K.-Y Jen, et al. "Development of Large Band Gap Host Materials for High-Energy Phosphorescent Emitters", *PMSE Preprints* 92, 566 (2005).

M. S. Liu, J. D. Luo, A. K-Y. Jen, "Efficient Green Light-Emitting Diodes from Silole-Containing Copolymers", *Chem. Mater.* 15, 3496 (2003).

M. S. Liu, X. Z. Jiang, P. Herguth, S. Liu, A. K.-Y. Jen, "Development of Efficient Electron-Transporting Polymers for Light-Emitting Diodes", *Proc. SPIE* 4800, 130 (2003).

M. S. Liu, X. Z. Jiang, S. Liu, P. Herguth, A. K.-Y. Jen, "Effect of Cyano-Substituents on Electron Affinity and Electron-Transporting Properties of Conjugated Polymers", *Macromolecules* 35, 3532 (2002).

M. S. Liu, X. Z. Jiang, P. Herguth, A. K-Y. Jen, "Highly Efficient Electron-Transporting Polymers for Light-Emitting Diodes", *TOPS-Trends in Optics and Photonics Series*, Vol. 64, "Organic Thin Films for Photonic Applications", 110 (2002).

M. S. Liu, X. Z. Jiang, P. Herguth, A. K.-Y. Jen, "Synthesis and Characterization of Novel Conjugated Light-Emitting Polymers" *Mater. Res. Soc. Proc.* 725, 3 (2002)

M. S. Liu, X. Z. Jiang, P. Herguth, A. K.-Y. Jen, "Efficient Cyano-Containing Electron-Transporting Polymers for Light-Emitting Diodes", *Chem. Mater.* 13, 3820 (2001).

M. S. Liu, X. Z. Jiang, A. K.-Y. Jen, "Tuning of Redox Behavior and Fluorescence of Cyano-Containing Oligophenylenevinylenes", *Mater. Res. Soc. Proc.* 598, BB5, 53 (2000).

M. S. Liu, Y. Liu, R. C. Urian, H. Ma, A. K.-Y. Jen, "Synthesis and Characterization of Polyquinolines for Light-emitting Diodes", J. *Mater. Chem.* 9, 2201 (1999).

CONFERENCE PRESENTATIONS

M. S. Liu, "Highly Efficient Blue Electrophosphorescent Polymer Light-Emitting Diodes Using Multiple Hole Transporting Layers", 232th ACS National Meeting, San Francisco, CA, September 10-14, 2006.

M. S. Liu, "Development of Thermally Crosslinkable Hole-Transporting Materials and Large Band-Gap Polymers for Organic Light-Emitting Diodes", 229th ACS National Meeting, San Diego, CA, March 13-17, 2005.

M. S. Liu, "Development of Efficient Light-Emitting Polymers for Flat Panel Displays", The Puget Sound Chapter of ASM International Meeting, Seattle, Washington, March 11, 2003.

M. S. Liu, "Development of Efficient Electron-Transporting Polymers for Light-Emitting Diodes", The International Society for Optical Engineering (SPIE) Conference, Seattle, Washington, July 7-July 24, 2002.

M. S. Liu, "Highly Efficient Electron-Transporting Polymers for Light-Emitting Diodes", Optical Society of America (OSA) Conference, Long Beach, California, October 17-21, 2001.

M. S. Liu, "Highly Efficient Cyano-Containing Electron-Transporting Polymers for Light-Emitting Diodes", ACS Northwest Regional Meeting (NORM), Seattle, Washington, June 14-July 17, 2001.