MINDY N. RITTNER, PH.D. PATENT AGENT

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EDUCATION

Ph.D., Materials Science & Engineering
Northwestern University
B.S.E., cum laude, Mechanical Engineering
Princeton University

BAR ADMISSIONS

U.S. Patent & Trademark Office

Having worked in the nanotechnology space in academia and industry for more than a decade, Dr. Mindy Rittner brings deep experience to her clients and colleagues as both a scientific advisor and patent agent. Focused on patent preparation and prosecution, Mindy's practice has an emphasis on materials science, nanotechnology, and the mechanical and electrical arts.

Mindy sees her hands-on research experience as the chief reason she can effectively communicate with and relate to inventors, many of whom are scientists and engineers. Additionally, scaling the learning curve in such a complex field early on in her career gave Mindy the ability to quickly understand other emerging technologies. Today she is one of the most versatile new technology experts in the firm.

Mindy combines her extensive knowledge base with a dedication to do whatever it takes to help clients achieve their objectives, an attitude that helps move her practice forward.

EXPERIENCE | OVERVIEW

- Mindy is registered to practice before the U.S. Patent & Trademark Office as a patent agent, and has drafted and prosecuted patent applications on a wide range of subject matter, including nanostructures, composite materials, metal alloys, thin films and coatings, 3D printing, materials processing methods, medical products, diagnostic systems, light emitting devices, semiconductor technology, and magnetic materials and systems.
- In her role as scientific advisor, Mindy provides technical expertise in support of opinion work, due diligence investigations and litigation strategy.
- Prior to joining the firm, Mindy worked as a scientist and inventor at Argonne National Laboratory and Northwestern University, and then as Director of Nanotechnology Research at BCC Research, Inc. (BCC), a technical-market research firm.
- Mindy's academic honors include being awarded an Amelia Earhart Fellowship and Walter P. Murphy Fellowship, both while earning her Ph.D. in Materials Science & Engineering from Northwestern University

EXPERIENCE | LEGAL

- **Brinks Gilson & Lione**, Chicago, IL
  Scientific Advisor and Registered Patent Agent, 2005-Present

EXPERIENCE | NON-LEGAL

- **BCC Research, Inc.**, Norwalk, CT
  Director of Nanotechnology Research and Industry Analyst, 1996-2005

Editor, *Nanoparticle News*
Co-Chair, *Nanomaterials* Annual Conference

- **Northwestern University and Argonne National Laboratory**, Evanston and Argonne, IL
  Research Fellow and Assistant, 1991-1996
- **AT&T Bell Laboratories**, Holmdel, NJ
  Technical Associate, Summer, 1990

Practice Group

Patent Prosecution

Forward Thinking

Presentations

- M. N. Rittner, "Patenting Issues and Trends in Nanotechnology," *Materials Issues in Intellectual Property*, TMS (The Minerals, Metals and Materials Society) Webcast, April 20, 2006
- M. N. Rittner, "Nanoelectronics and Nanomagnetics: An Overview," Nanomaterials 2004, Stamford, CT, October 24-27, 2004
- M. N. Rittner, "Nanomaterials Market Overview," *NanoCommerce 2004*, Chicago, IL, October 5-7, 2004
- M. N. Rittner, "Status Report: Nano-Optics, Electronics, and Magnetics," *NanoCommerce 2003*, Chicago, IL, December 8-11, 2003
- M. N. Rittner, "Nanomaterials in Nanoelectronics," Nanoparticles 2003, Cambridge, MA, October 26-28, 2003
- M. N. Rittner, "Applications and Markets for Nanomaterials," PPG Glass Technology Center, Pittsburgh, PA, December 6, 2002
- M. N. Rittner, "Applications and Markets for Nanomaterials," Nanomaterials Crossroads 2002, Montreal, Quebec, Canada, November 18-19, 2002
- M. N. Rittner, "World Market Overview for Nanoparticulate Materials," Nanoparticles 2002, New York, NY, October 27-29, 2002
- M. N. Rittner, "Electronic, Optoelectronic and Magnetic Applications for Nanomaterials," Panel Discussion, Nanotechnology Business Roadmap for Industry, Chicago, IL, October 14-17, 2002
- M. N. Rittner, "Bioapplications and Markets for Inorganic Nanoparticles," Nanotechnology Colloquium, IC2 Institute, University of Texas at Austin, June 24, 2002
- M. N. Rittner, "Bioapplications and Markets for Inorganic Nanoparticles," Nanotech and Biotech Convergence, Stamford, CT, May 6-7, 2002
- M. N. Rittner, "Market Analysis of Nanostructured Materials: New Data," Fine, Ultrafine and Nano Particles 2001, Chicago, IL, October 14-17, 2001
- M. N. Rittner, "Beyond the Hype: Opportunities and Markets for Nanoparticulate Materials," Fine, Ultrafine and Nano Powders 2000, Montreal, Quebec, Canada, October 29-31, 2000
- M. N. Rittner, "Metal Matrix Composites in the 21st Century: Markets and Opportunities," 2nd Annual Aluminum Metal Matrix Composites Meeting, Orlando, FL, May 26, 1999
- M. N. Rittner, "Nanostructured Materials: An Industry and Market Analysis," Fine, Ultrafine and Nano Powders '98, New York, NY, November 8-10, 1998
- M. N. Rittner, "Market Opportunities for Nanostructured Materials," Ninth CIMTEC – World Ceramics Congress & Forum on New Materials, Florence, Italy, June, 1998
- M. N. Rittner, "Industry Trends and Markets for Iron Oxide Powders," Ninth CIMTEC – World Ceramics Congress & Forum on New Materials, Florence, Italy, June, 1998

- M. N. Rittner, J. R. Weertman, J. A. Eastman, K. B. Yoder, and D. S. Stone, “Microhardness and Elastic Modulus of Nanocrystalline Al-Zr,” Engineering Foundation Conference on the Mechanical Properties of Interfacial Materials, Kona, Hawaii, January 14-19, 1996
- M. N. Rittner, J. R. Weertman, J. A. Eastman, K. B. Yoder, and D. S. Stone, “Microstructure and Mechanical Properties of Nanocrystalline Al-Zr Alloy Composites,” TMS/ASM Materials Week ‘95 Meeting, Cleveland, Ohio, October 29-November 2, 1995
- M. N. Rittner, J. A. Eastman, and J. R. Weertman, “Synthesis and Properties Studies Of Nanocrystalline Al-Al3Zr,” Materials Research Society 1994 Fall Meeting, Boston, Massachusetts, November 28-December 2, 1994
- M. N. Rittner, J. R. Weertman and J. A. Eastman, "Synthesis and Properties Of Nanocrystalline Al-Al3Zr,” Alcoa Technical Center Seminar, Alcoa Center, PA, July, 1994.
- M. S. Niedzielka (Rittner), J. A. Eastman, and J. R. Weertman, "Nanocrystalline Al-Zr Alloys," Engineering Foundation Nanophase Materials Conference, Davos, Switzerland, March 12-17, 1994
- M. S. Niedzielka (Rittner) and J. R. Weertman, “Nanocrystalline Aluminum Alloys,” Zonta Foundation Annual Meeting, Rockford, IL, October, 1992

Honors

- Amelia Earhart Fellow, Northwestern University
- Walter P. Murphy Fellow, Northwestern University

Affiliations

- Materials Research Society (MRS)

Representative Matters

- U.S. Patent 10,073,293, “Optical Microcavity for a High-Contrast Display,” issued on September 11, 2018.
- U.S. Patent 10,058,437, “Surface Structure of a Component of a Medical Device and Method of Forming the Surface Structure,” issued on August 28, 2018.
- U.S. Patent 10,062,904, “Scaffold-Free 3D Porous Electrode and Method of Making a Scaffold-Free 3D Porous Electrode,” issued on August 28, 2018.
- U.S. Patent 10,053,760, “Method of Thermomagnetically Processing an Aluminum Alloy,” issued on August 21, 2018.
- U.S. Patent 10,046,353, “Microscale Stamp with Reversible Adhesion for Transfer Printing,” issued on August 14, 2018.
- U.S. Patent 10,038,199, “Noble Metal-Based Electrocatalyst and Method of Treating a Noble Metal-Based Electrocatalyst,” issued on July 31, 2018.
- U.S. Patent 10,016,846, “System, Method, and Apparatus for Repair of Components,” issued on July 10, 2018.
- U.S. Patent 10,003,317, “Tubular Resonant Filter and Method of Making a Tubular Resonant Filter,” issued on June 19, 2018.
- U.S. Patent 10,000,827, “Method of Forming a Sintered Nickel-Titanium-Rare Earth (Ni-Ti-RE) Alloy,” issued on June 19, 2018.
- U.S. Patent 9,945,011, “Magnesium-Based Alloy for Wrought Applications,” issued on April 17, 2018.
- U.S. Patent 9,914,106, “Method of Producing Silicone Microspheres,” issued March 12, 2018.
- U.S. Patent 9,896,954, “Dual-Walled Ceramic Matrix Composite (CMC) Component with Integral Cooling and Method of Making a CMC Component with Integral Cooling,” issued February 20, 2018.
- U.S. Patent 9,878,536, “Acoustophoretic Printing Apparatus and Method,” issued January 30, 2018.
- U.S. Patent 9,873,933, “Nickel-Titanium Alloy Including a Rare-Earth Element,” issued January 23, 2018.

- U.S. Patent 9,855,538, “Ultrasonic Method and Apparatus for Producing Particles Having a Controlled Size Distribution,” issued January 2, 2018.
- U.S. Patent 9,780,266, “Stabilized Quantum Dot Structure and Method of Making a Stabilized Quantum Dot Structure,” issued October 3, 2017.
- U.S. Patent 9,704,951, “Apparatus and Method for Magnetic Field Guided Metal-Assisted Chemical Etching,” issued on July 11, 2017.
- U.S. Patent 9,675,481, “Hybrid Balloon-Expandable/Self-Expanding Prosthesis for Deployment in a Body Vessel and Method of Making,” issued on June 13, 2017.
- U.S. Patent 9,680,161, “Noble Metal-Based Electrocatalyst and Method of Treating a Noble Metal-Based Electrocatalyst,” issued on June 13, 2017.
- WO/2017/095773, “Hydrogel Composite Ink Formulation and Method of 4D Printing a Hydrogel Composite Structure,” published June 8, 2017.
- WO/2017/079130, “Block Copolymer Ink Formulation for 3D Printing and Method of Making a 3D Printed Radiofrequency (RF) Device,” published May 11, 2017.
- U.S. Patent 9,643,358, “Multinozzle Deposition System for Direct Write Applications,” issued on May 9, 2017.
- WO/2017/074925, “Architecture for Achieving Stable Wave Propagation through a Soft Material,” published May 4, 2017.
- U.S. Patent 9,617,189, “Apparatus and Method for Materials Processing Utilizing a Rotating Magnetic Field,” issued on April 11, 2017.
- U.S. Patent 9,601,234, “Three-Dimensional (3D) Porous Device and Method of Making a 3D Porous Device,” issued on March 21, 2017.
- U.S. Patent No. 9,559,349, “Method of Fabricating a Three-Dimensional (3D) Porous Electrode,” issued on January 31, 2017.
- U.S. Patent No. 9,537,052, “Coated Phosphors and Light Emitting Devices Including the Same,” issued January 3, 2017.
- U.S. Patent 9,517,939, “Method of Enhancing the Connectivity of a Colloidal Template, and a Highly Interconnected Porous Structure,” issued on December 13, 2016.
- WO/2016/187097, “Foam Ink Composition and 3D Printed Hierarchical Porous Structure,” published November 24, 2016.
- U.S. Patent 9,475,120, “Apparatus and Method for Dispersing Particles in a Molten Material without using a Mold,” issued on October 25, 2016.
- WO/2016/153886, “Biphasic Electrode Suspension for a Semi-Solid Flow Cell,” published September 29, 2016.
- WO/2016/149032, “Printhead and Method for 3D Printing of Multiple Materials,” published September 22, 2016.
- U.S. Patent 9,447,319, “Yellow Phosphor Having an Increased Activator Concentration and a Method of Making a Yellow Phosphor,” issued on September 20, 2016.
- WO/2016/145309, “3D Printed Flexible Electronic Device,” published September 15, 2016.
- WO/2016/144944, “Method of Making an Electrode Structure and a Microbattery Cell, published September 15, 2016.
- U.S. Patent 9,437,788, “Light Emitting Diode (LED) Component Comprising a Phosphor with Improved Excitation Properties,” issued on September 6, 2016.
- U.S. Patent 9,406,938, “Three-Dimensional (3D) Porous Electrode Architecture for a Microbattery,” issued on August 2, 2016.

- U.S. Patent 9,375,790, “Continuous Flow Reactor and Method for Nanoparticle Synthesis,” issued on June 28, 2016.
- U.S. Patent 9,331,253, “Light Emitting Diode (LED) Component Comprising a Phosphor with Improved Excitation Properties,” issued on May 3, 2016.
- U.S. Patent 9,330,910, “Method of Forming an Array of Nanostructures,” issued on May 3, 2016.
- U.S. Patent 9,330,829, “Rolled-Up Transformer Structure for a Radiofrequency Integrated Circuit (RFIC),” issued on May 3, 2016.
- U.S. Patent 9,289,820, “Apparatus and Method for Dispersing Particles in a Molten Material Without Using a Mold,” issued on March 22, 2016.
- U.S. Patent 9,263,636, “Light-Emitting Diode (LED) for Achieving an Asymmetric Light Output,” issued on February 16, 2016.
- U.S. Patent 9,255,343, “Iron-Based Composition for Magnetocaloric Effect (MCE) Applications and Method of Making a Single Crystal,” issued on February 9, 2016.
- U.S. Patent 9,224,532, “Rolled-Up Inductor Structure for a Radiofrequency Integrated Circuit (RFIC),” issued on December 29, 2015.
- U.S. Patent 9,224,809, “Field Effect Transistor Structure Comprising a Stack of Vertically Separated Channel Nanowires,” issued on December 29, 2015.
- U.S. Patent 9,212,409, “Mixture of Powders for Preparing a Sintered Nickel-Titanium-Rare Earth Metal (Ni-Ti-RE) Alloy,” issued on December 15, 2015.
- U.S. Patent 9,173,983, “Surface Structure of a Component of a Medical Device and Method of Forming the Surface Structure,” issued on November 3, 2015.
- U.S. Patent 9,171,733, “Method of Selectively Etching a Three-Dimensional Structure,” issued on October 27, 2015.
- U.S. Patent 9,138,338, “Two-Stage Method of Compressing a Stent,” issued on September 22, 2015.
- WO/2015/120429, “Three-Dimensional (3D) Printed Composite Structure and 3D Printable Composite Ink Formulation,” published August 13, 2015.
- WO/2015/120430, “3D-Printed Polishing Pad for Chemical Mechanical Planarization (CMP),” published August 13, 2015.
- U.S. Patent 9,103,006, “Nickel-Titanium Alloy Including a Rare Earth Element,” issued on August 11, 2015.
- U.S. Patent 9,045,657, “Viscoelastic Ink for Direct Writing of Hydrogel Structures,” issued on June 2, 2015.
- WO/2015/073944, “Printed Stretchable Strain Sensor,” published May 21, 2015.
- U.S. Patent 9,035,328, “Light-Emitting Diode Component,” issued on May 19, 2015.
- WO/2015/069619, “Method of Printing a Tissue Construct with Embedded Vasculature,” published May 14, 2015.
- U.S. Patent 9,018,050, “Rolled-up Transmission Line Structure for a Radiofrequency Integrated Circuit (RFIC),” issued on April 28, 2015.
- U.S. Patent 8,998,974, “Woven Fabric with Carbon Nanotube Strands,” issued on April 7, 2015.
- U.S. Patent 8,980,185, “Microreactor and Method for Preparing a Radiolabeled Complex or a Biomolecule Conjugate,” issued on March 17, 2015.
- U.S. Patent 8,980,656, “Method of Forming an Array of High Aspect Ratio Semiconductor Nanostructures,” issued on March 17, 2015.
- U.S. Patent 8,956,577, “Microfluidic Device Comprising a Biodegradable Material and Method of Making Such a Microfluidic Device,” issued February 17, 2015.
- U.S. Patent 8,951,430, “Metal Assisted Chemical Etching to Produce III-V Semiconductor Nanostructures,” issued February 10, 2015.

- WO/2014/209994, “Printed Three-Dimensional (3D) Functional Part and Method of Making,” published December 31, 2014.
- U.S. Patent 8,920,767, “Array of Titanium Dioxide Nanostructures for Solar Energy Utilization,” issued December 30, 2014.
- U.S. Patent 8,810,009, “Method of Fabricating a Planar Semiconductor Nanowire,” issued August 19, 2014.
- U.S. Patent 8,795,444, “Method and Apparatus for Thermomagnetically Processing a Workpiece,” issued August 5, 2014.
- U.S. Patent 8,632,745, “Method and Apparatus for Controlling Stoichiometry in Multicomponent Materials,” issued January 21, 2014.
- U.S. Patent 8,608,992, “Carbon Nanofibers Derived from Polymer Nanofibers and Method of Producing the Nanofibers,” issued December 17, 2013.
- U.S. Patent 8,529,749, “Electrochemical Cell Including a Plasma Source and Method of Operating the Electrochemical Cell,” issued September 10, 2013.
- U.S. Patent 8,460,782, “Array of Aligned and Dispersed Carbon Nanotubes and Method of Producing the Array,” issued June 11, 2013.