

MARK E. RENTSCHLER

Current Position

Assistant Professor
Department of Mechanical Engineering
University of Colorado at Boulder
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Education

University of Nebraska, Lincoln, NE
Ph.D., Biomedical Engineering, May 2006
Thesis: *In vivo Abdominal Surgical Robotics: Tissue Mechanics Modeling, Robotic Design, Experimentation and Analysis*
Advisor: Prof. Shane Farritor

Massachusetts Institute of Technology, Cambridge, MA
M.S., Mechanical Engineering, June 2003
Thesis: *Dynamic Simulation Modeling and Control of the Odyssey III Autonomous Underwater Vehicle*
Advisor: Prof. Franz Hover

University of Nebraska, Lincoln, NE
B.S., Mechanical Engineering, *Summa cum laude*, May 2001
Thesis: *Mobile Highway Construction Barrel Robots*
Advisor: Prof. Shane Farritor

University of Technology of Belfort-Montbéliard, Belfort, France
Automotive engineering exchange summer program
Curriculum of automotive engineering

Academic Positions

Assistant Professor 08/2008-present
Department of Mechanical Engineering
University of Colorado at Boulder
Department of Surgery (secondary appointment)
Department of Bioengineering (affiliate appointment)
University of Colorado at Denver Anschutz Medical Campus

Postdoctoral Researcher 06/2006-05/2007
Department of Surgery in the Division of Vascular Surgery
University of Nebraska Medical Center, Omaha NE

Graduate Research Fellow 06/2003-05/2006
Department of Mechanical Engineering
University of Nebraska, Lincoln NE

Graduate Research Fellow 08/2001-06/2003
Department of Mechanical Engineering
National Defense Science and Engineering Graduate (NDSEG) Fellowship
Massachusetts Institute of Technology

	Research Associate NASA Academy Goddard Space Flight Center, Greenbelt MD	06/2001-08/2001
Engineering Positions	Director of Operations Intellectual Property Portfolio Development Virtual Incision Corporation, Boston MA	05/2007-07/2008
	Senior Engineer Robotic Design and Development Virtual Incision Corporation, Omaha NE	06/2006-05/2007
Licensure	Licensed Professional Mechanical Engineer	2008-present
Honors and Awards	Colorado Clinical and Translational Sciences Institute (CCTSI) <i>Junior Faculty Pilot Award</i> (4 awards, 40 proposals)	2011
	CU Engineering Alumni Magazine Feature	2010
	University of Colorado (UCB) Technology Transfer <i>New Inventor of the Year</i>	2009
	University of Colorado Volleyball <i>Professor of the Match</i>	2009
	UCB Campus <i>Innovative Seed Grant Program Award</i> (20 awards, 80 proposals)	2009
	BMW Group International <i>Passion for Innovation</i> Scientific Award Finalist (5 finalists out of 241 applicants from 25 countries)	2007
	University of Nebraska Outstanding Graduate Research Assistant Award for University-wide Best Research	2006
	Nominated for the Construction Innovation Forum (CIF) NOVA Award for "Robotic Traffic Barrels"	2005
	NASA Columbia Memorial Scholarship	2004-2006
	National Defense Science and Engineering Graduate (NDSEG) Fellowship	2001-2004
	Tau Beta Pi Centennial Graduate Fellowship	2001-2002
	Goddard Award for Excellence for outstanding research efforts and overall NASA Academy commitment	2001
Invited Lectures	"Robotic Mobility Inside of the Human Body," University of Colorado, Department of Mechanical Engineering Graduate Seminar Presentation, Boulder, CO, November, 2009. "In Vivo Abdominal Surgical Robotics: Tissue Mechanics Modeling, Robotic Design, Experimentation, and Analysis," BMW Group International Passion for Innovation Scientific Award, Munich, Germany, September, 2007. "Virtual Incision Corporation – A Revolution in Minimally-Invasive Surgery," LifeScience Alley Conference on Biomedical Science, Saint Paul, MN, December, 2006. "Mobile Robotics for <i>In vivo</i> Surgical and Battlefield Applications," Army Research Office (ARO) Workshop on Mobility and Control in Challenging Environments, Olin College, Needham, MA, October, 2006. "Mobile <i>In vivo</i> Robotics for Laparoscopic Surgery," University of Nebraska – Lincoln, Department of Mechanical Engineering, November, 2005. "In vivo Robotics," Nebraska Academy of Science Annual Meeting, Lincoln, NE, April, 2005.	

Publications

Theses

Rentschler, M., *In Vivo Abdominal Surgical Robotics: Tissue Mechanics Modeling, Robotic Design, Experimentation, and Analysis*, Ph.D. Dissertation, University of Nebraska, Lincoln, NE, 2006.

Rentschler, M., *Dynamic Simulation Modeling and Control of the Odyssey III Autonomous Underwater Vehicle*, Master's Thesis, Massachusetts Institute of Technology, Cambridge, MA, 2003.

Rentschler, M., *Mobile Highway Construction Barrel Robots*, Bachelor's Thesis, University of Nebraska, Lincoln, NE, 2001.

Books, Book Chapters, and Magazine Articles

Rentschler, M., Oleynikov, D., "Will in vivo robotics be the future of minimally invasive surgery?" *Med Tech Business Review*. 1(4): 70-73, 2007.

Rentschler, M., "Undergraduates Benefit From Conducting Research," *Nebraska Blueprint*. Spring, 2001.

Journal Publications (peer-reviewed original articles)

Terry, B.S., Schoen, J.A., Mills, Z., **Rentschler, M.E.**, "Single Port Access Surgery with a Novel Port Camera System," *Surgical Innovation*, 2011 (Epub).

Terry, B.S., Lyle, A., Schoen, J.A., **Rentschler, M.E.**, "Preliminary Mechanical Characterization of the Small Bowel for *In vivo* Robotic Mobility," *ASME Journal of Biomechanical Engineering*, 133(9): 091010-1-091010-7, 2011.

Zimkowski, M., Lindley, E., Patel, V., **Rentschler, M.E.**, "Design and Evaluation of a Computer-Controlled Pressure Algometer," *ASME Journal of Medical Devices*, 5(3): 031002-1-031002-6, 2011.

Sliker, L.J., Wang, X., Schoen, J.A., **Rentschler, M.E.**, "Micropatterned Treads for *In vivo* Robotic Mobility," *ASME Journal of Medical Devices*, 4(4): 041006-1-041006-8, 2010.

Rentschler, M.E., Macdonald, S.A., "Design and Preliminary Evaluation of a Novel Brace for Boutonniere Deformity," *ASME Journal of Medical Devices*, 4(2): 021002-1-021002-7, 2010.

Terry, B.S., Ruppert, A.D., Steinhaus, K.R., Schoen, J.A., **Rentschler, M.E.**, "An Integrated Port Camera and Display System for Laparoscopy," *IEEE Transactions on Biomedical Engineering*. 57(5): 1191-1197, 2010.

Platt, S.R., Hawks, J.A., **Rentschler, M.E.**, "Vision and Task Assistance using Modular Wireless *In Vivo* Surgical Robots," *IEEE Transactions on Biomedical Engineering*. 56(6): 1700-1710, 2009.

Rentschler, M., Reid, J., "The Development of a Material Model and Wheel-Tissue Interaction for Simulating Wheeled Surgical Robot Mobility," *Computer Methods in Biomechanics and Biomedical Engineering*. 12(2): 239-248, 2009.

Joseph, J.V., Oleynikov, D., **Rentschler, M.**, Dumpert, J., Patel, H.R., "Microrobot Assisted Laparoscopic Urological Surgery in a Canine Model," *Journal of Urology*. 180(5): 2202-2205, 2008.

Rentschler, M., Baxter, B.T., "Screening Aortic Drug Treatments through Arterial Compliance Measurements," *Current Vascular Pharmacology*. 6(4): 250-257, 2008.

Soares, R.F., Allen, D.H., Kim, Y.R., Berthelot, C., Soares, J.B, **Rentschler, M.E.**, "A Computational Model for Predicting the Effect of Tire Configuration on Asphaltic Pavement Life," *International Journal on Road Materials and Pavement Design*. 9(2): 271-289, 2008.

- Lehman, A.C., Berg, K.A., Dumpert, J., Wood, N.A., Visty, A.Q., **Rentschler, M.E.**, Platt, S.R., Farritor, S.M., Oleynikov, D., "Surgery with Cooperative Robots," *Computer Aided Surgery*. 13(2): 95-105, 2008.
- Rentschler, M.**, Platt, S., Berg, K., Dumpert, J., Oleynikov, D., Farritor, S., "Miniature *In vivo* Robotics for Remote and Harsh Environments," *IEEE Transactions on Information Technology in Biomedicine*. 12(1): 66-75, 2008.
- Rentschler, M.**, Baxter, B.T., "Medical Therapy Approach for Treating Abdominal Aortic Aneurysm," *Vascular*. 15(6): 361-365, 2007.
- Rentschler, M.**, Iagnemma, K., Farritor, S., "Mechanical Design of Robotic *In vivo* Wheeled Mobility," *ASME Journal of Mechanical Design*. 129(10): 1037-1045, 2007.
- Rentschler, M.**, Dumpert, J., Platt, S., Farritor, S., Oleynikov, D., "Natural Orifice Surgery with an Endoluminal Mobile Robot," *Journal of Surgical Endoscopy*. 21(7): 1212-1215, 2007.
- Rentschler, M.**, Dumpert, J., Platt, S., Iagnemma, K., Oleynikov, D., Farritor, S., "An *In vivo* Mobile Robot for Surgical Vision and Task Assistance," *ASME Journal of Medical Devices*. 1(1): 23-29, 2007.
- Rentschler, M.**, Baxter, B.T., "Pharmacological Approaches to Prevent Abdominal Aortic Aneurysm Enlargement and Rupture," *Annals of the New York Academy of Sciences*. 1085: 39-46, 2006.
- Rentschler, M.**, Dumpert, J., Platt, S., Iagnemma, K., Oleynikov, D., Farritor, S., "Modeling, Analysis, and Experimental Study of *In Vivo* Wheeled Robotic Mobility," *IEEE Transactions on Robotics*. 22(2): 308-321, 2006.
- Rentschler, M.**, Hover, F., Chryssostomidis, C., "System Identification of Open Loop Maneuvers Leads to Improved AUV Flight Performance," *IEEE Journal of Oceanic Engineering*. 31(1): 200-208, 2006.
- Rentschler, M.**, Dumpert, J., Platt, S., Ahmed, S., Farritor, S., Oleynikov, D., "Mobile *In Vivo* Robots Provide Sole Visual Feedback for Abdominal Exploration and Cholecystectomy," *Journal of Surgical Endoscopy*. 20(1): 135-138, 2006.
- Oleynikov, D., **Rentschler, M.**, Hadzialic, A., Dumpert, J., Platt, S., Farritor, S., "Miniature Robots Can Assist in Laparoscopic Cholecystectomy," *Journal of Surgical Endoscopy*. 19(4): 473-476, 2005.

Journal Publications (peer-reviewed review articles)

- Rentschler, M.**, Oleynikov, D., "Recent *In vivo* Surgical Robot and Mechanism Developments," *J. of Surgical Endoscopy*. 21(9): 1477-1481, 2007.
- Lehman, A.C., **Rentschler, M.E.**, Farritor, S.M., Oleynikov, D., "The Current State of Miniature *In vivo* Laparoscopic Robotics," *Journal of Robotic Surgery*. 1(1): 45-49, 2007.
- Lehman, A.C., **Rentschler, M.E.**, Farritor, S.M., Oleynikov, D., "Endoluminal Minirobots for Transgastric Peritoneoscopy," *Minimally Invasive Therapy and Allied Technologies*. 15(6): 384-388, 2006.
- Rentschler, M.**, Platt, S., Dumpert, J., Farritor, S., Oleynikov, D., "*In Vivo* Laparoscopic Robotics," *International Journal of Surgery*. 4(3): 167-171, 2006.
- Oleynikov, D., **Rentschler, M.E.**, Dumpert, J., Platt, S.R., Farritor, S.M., "*In Vivo* Robotic Laparoscopy," *Surgical Innovation*. 12(2): 177-181, 2005.

Conference Publications (peer-reviewed original paper)

Terry, B.S., Lyle, A., Schoen, J.A., **Rentschler, M.E.**, "Preliminary Mechanical Characterization of the Small Bowel for In vivo Mobility," ASME International Mechanical Engineering Congress and Exposition, Vancouver, British Columbia, Canada, November, 2010.

Wang, X., Qi, H., **Rentschler, M.E.**, "Analysis of Wheel-Tissue Interaction for In vivo Robotic Mobility," ASME International Mechanical Engineering Congress and Exposition, Vancouver, British Columbia, Canada, November, 2010.

Hart, K.D., Mitchell, M.B., **Rentschler, M.E.**, "Initial Design and Evaluation of an Intra-Cardiac Camera System for Ventricular Septal Defects," ASME DETC and CIE Conference – Mechanisms and Robotics Conference, Montreal, Quebec, Canada, August, 2010.

Sliker, L.J., Schoen, J.A., **Rentschler, M.E.**, "Preliminary In vivo Capsule Crawler Mobility," ASME DETC and CIE Conference – Mechanisms and Robotics Conference, Montreal, Quebec, Canada, August, 2010.

Rentschler, M.E., Zable, J.A., "Beyond Capstone Design – Developing a New Graduate Design Pedagogy and Program," National Capstone Conference, Boulder, CO, June, 2010.

Platt, S.R., Hawks, J.A., **Rentschler, M.E.**, Redden, L., Oleynikov, D., Farritor, S., "Modular Wireless Wheeled In vivo Surgical Robots," ASME DETC and CIE Conference - 30th Biennial Mechanisms and Robotics Conference, vol. 2, pp. 727-736, Brooklyn, NY, August, 2008.

Rentschler, M., Dumpert, J., Platt, S., Oleynikov, D., Iagnemma, K., Farritor, S. "Mobile In Vivo Biopsy Robot," IEEE International Conference on Robotics and Automation, pp. 4155-4160, Orlando, FL, May, 2006.

Rentschler, M., Dumpert, J., Hadzialic, A., Platt, S., Oleynikov, D., Iagnemma, K., Farritor, S., "Theoretical and Experimental Analysis of In Vivo Wheeled Mobility," Proceedings of the ASME DETC and CIE Conference - 28th Biennial Mechanisms and Robotics Conference, vol. 2, pp. 1241-1249, Salt Lake City, UT, October, 2004.

Rentschler, M., Hover, F., Chrysostomidis, C., "Modeling and Control of an Odyssey III AUV through System Identification Tests", 13th International Symposium on Unmanned Untethered Submersible Technology, Durham, NH, August, 2003.

Farritor, S., **Rentschler, M.**, "Robotic Highway Safety Markers", American Society of Mechanical Engineers, Dynamic Systems and Control Division DSC, vol. 71, pp. 833-839, New Orleans, LA, November, 2002.

Conference Publications (peer-reviewed original abstract)

Hawks, J., **Rentschler, M.**, Farritor, S., Oleynikov, D., Platt, S., "A Modular Wireless In Vivo Surgical Robot with Multiple Surgical Applications," Studies in Health Technology and Informatics - Medicine Meets Virtual Reality, vol. 142, pp. 117-121, IOS Press, Long Beach, CA, January, 2009.

Hawks, J., **Rentschler, M.**, Redden, L., Infanger, R., Dumpert, J., Farritor, S., Oleynikov, D., Platt, S., "Towards an In Vivo Wireless Mobile Robot for Surgical Assistance," Studies in Health Technology and Informatics - Medicine Meets Virtual Reality, vol. 132, pp. 153-158, IOS Press, Long Beach, CA, January, 2008.

Joseph, J.V., Boczko, J., Capello, S., Oleynikov, D., Dumpert, J., **Rentschler, M.**, Patel, H.R., "Microrobots in Urology: Video Demonstration of Microrobot-Assisted Laparoscopic Prostatectomy and Nephrectomy in a Canine Model," *Journal of Endourology*. 20: A311, 2006.

Joseph, J.V., Oleynikov, D., Boczko, J., **Rentschler, M.**, Dumpert, J., Patel, H.R., "Microrobots in urologic surgery: The next step in the evolution of robotic surgery," *Journal of Urology*, 175(4): 344, 2006.

Rentschler, M., Dumpert, J., Platt, S., Farritor, S., Oleynikov, D., “*Mobile In Vivo Biopsy and Camera Robot*,” Studies in Health Technology and Informatics - Medicine Meets Virtual Reality, vol. 119, pp. 449-454, IOS Press, Long Beach, CA, January, 2006.

Rentschler, M., Dumpert, J., Platt, S., Farritor, S., Oleynikov, D., “*Toward In Vivo Mobility*,” Studies in Health Technology and Informatics - Medicine Meets Virtual Reality, vol. 111, pp. 397-403, IOS Press, Long Beach, CA, January, 2005.

Rentschler, M., Oleynikov, D., Hadzialic, A., Dumpert, J., Platt, S., Farritor, S., “*In Vivo Camera Robots Provide Improved Vision for Laparoscopic Surgery*,” International Congress Series - Proceedings of Computer Assisted Radiology and Surgery Conference, vol. 1268, pp. 787-792, Chicago, IL, June, 2004.

Rentschler, M., Hadzialic, A., Dumpert, J., Platt, S., Farritor, S., Oleynikov, D., “*In Vivo Robots for Laparoscopic Surgery*,” Studies in Health Technology and Informatics - Medicine Meets Virtual Reality, vol. 98, pp. 316-322, IOS Press, Newport Beach, CA, January, 2004.

Conference Presentations without Publication (peer-reviewed original abstract)

Mills, Z., Terry, B., Schoen, J.A., **Rentschler, M.E.**, “*Single Port Access Surgery with a Novel Magnet Camera System*,” ASME International Mechanical Engineering Congress and Exposition, Denver, CO, November, 2011 (IMECE2011-63963).

Lyle, A., Terry, B., Schoen, J.A., **Rentschler, M.E.**, “*An Experimental Evaluation of Small Bowel Friction Forces when Eliminating Edge Effects*,” ASME International Mechanical Engineering Congress and Exposition, Denver, CO, November, 2011 (IMECE2011-63943).

Kern, M., Sliker, L.J., Schoen, J.A., **Rentschler, M.E.**, “*Preliminary In vivo Capsule Endoscopic Mobility Using Micro-Patterned Treads*,” ASME International Mechanical Engineering Congress and Exposition, Denver, CO, November, 2011 (IMECE2011-63723)

Sliker, L.J., Schoen, J.A., **Rentschler, M.E.**, “*The Design and Experimental Evaluation of Micro-Patterned Treads for In vivo Robotic Mobility*,” ASME International Mechanical Engineering Congress and Exposition, Denver, CO, November, 2011 (IMECE2011-63766).

Cezo, J., Ferguson, V., **Rentschler, M.E.**, “*Computational Modeling of Direct Heat Tissue Fusion*,” ASME International Mechanical Engineering Congress and Exposition, Denver, CO, November, 2011 (IMECE2011-62134).

Terry, B.S., Schoen, J.A., **Rentschler, M.E.**, “*Development and Characterization of a Novel Sensor for Measuring the Radial Force from Myenteric Contractions*,” ASME International Mechanical Engineering Congress and Exposition, Denver, CO, November, 2011 (IMECE2011-62121).

Wang, X., Qi, H.J., **Rentschler, M.E.**, “*A Theoretical Study of Friction for In vivo Surgical Robotic Wheel-Tissue Interaction*,” ASME International Mechanical Engineering Congress and Exposition, Denver, CO, November, 2011 (IMECE2011-62386).

Wood, N., Lehman, A., **Rentschler, M.**, Farritor, S., Oleynikov, D., “*A Robotic Assistant for Surgical Dissection*,” Medicine Meets Virtual Reality, Long Beach, CA, January, 2009.

Lehman, A., Dumpert, J., Visty, A., **Rentschler, M.**, Farritor, S., Oleynikov, D., “*Towards Cooperative Miniature Robots for Natural Orifice Transluminal Endoscopic Surgery*,” Minimally Invasive Robotic Association (MIRA) Congress, Rome, Italy, January, 2008.

Berg, K., **Rentschler, M.**, Dumpert, J., Lehman, A., Platt, S., Oleynikov, D., Farritor, S., “*Surgery with Cooperative Robots*,” Medicine Meets Virtual Reality Conference, Long Beach, CA, February, 2007.

Rentschler, M., Berg, K., Dumpert, J., Platt, S., Oleynikov, D., Farritor, S., “*In vivo Robotics during the NEEMO 9 Mission*,” Medicine Meets Virtual Reality Conference, Long Beach, CA, February, 2007.

Rentschler, M., Dumpert, J., Lehman, A., Berg, K., Platt, S., Oleynikov, D., Farritor, S., “*In Vivo Robots for Tele-Surgery During Long-Term Space Flight*,” American Institute of Aeronautics and Astronautics Space Conference, San Jose, CA, September, 2006.

Boczko, J., Capello, S., Oleynikov, D., **Rentschler, M.**, Dumpert, J., Patel, H.R., Joseph, J.V., “*Microrobots in Urology: Video Demonstration of Microrobot-Assisted Laparoscopic Prostatectomy and Nephrectomy in a Canine Model*,” The 24th World Congress of Endourology, Cleveland, OH, August, 2006.

Rentschler, M., Reid, J., “*LS-DYNA Simulation of In vivo Surgical Robot Mobility*,” The 9th International LS-DYNA Users Conference, Dearborn, MI, June, 2006.

Rentschler, M., Dumpert, J., Platt, S., Farritor, S., Oleynikov, D., “*Natural Orifice Surgery with an Endoluminal Mobile Robot*,” The Society of American Gastrointestinal Endoscopic Surgeons, Dallas, TX, April 2006.

Rentschler, M., Dumpert, J., Platt, S., Iagnemma, K., Oleynikov, D., Farritor, S., “*In vivo Mobile Surgical Robotic Task Assistance*,” Design of Medical Devices Conference, Minneapolis, MN, April, 2006.

Rentschler, M., Dumpert, J., Platt, S., Farritor, S., Oleynikov, D., “*Mobile In Vivo Robots Can Assist In Abdominal Exploration*,” The Society of American Gastrointestinal Endoscopic Surgeons, Fort Lauderdale, FL, April, 2005.

Dumpert, J., **Rentschler, M.**, Platt, S., Farritor, S., Oleynikov, D., “*Improving In Vivo Robot Vision Quality*,” Medicine Meets Virtual Reality, Long Beach, CA, January, 2005.

Narazaki, K., Oleynikov, D., DiMartino, A., **Rentschler, M.**, Stergiou, N., “*Objective Quantification of Proficiency in Robotic Laparoscopy with Bimanual Inanimate Tasks*,” Medicine Meets Virtual Reality, Long Beach, CA, January, 2005.

Oleynikov, D., **Rentschler, M.**, Hadzialic, A., Dumpert, J., Platt, S., Farritor, S., “*Miniature Robots Can Assist in Laparoscopic Cholecystectomy*,” The Society of American Gastrointestinal Endoscopic Surgeons, Denver, CO, March, 2004.

Conference Posters (peer-reviewed original abstract)

Sliker, L., Kern, M.D., Schoen, J.A., **Rentschler, M.E.**, “*Biologically Inspired Micro-Patterned Treads for Robotic Capsule Endoscope Mobility*,” Covidien R&D Summit, Westminster, CO, October, 2011.

Terry, B.S., Schoen, J.A., **Rentschler, M.E.**, “*Experimental Measurements of the Radial Force from Myenteric Contractions on a Solid Bolus*,” Covidien R&D Summit, Westminster, CO, October, 2011.

Schoen, J.A., Mills, Z., Terry, B.S., **Rentschler, M.E.**, “*A SILS-Specific Camera System*,” The Society of American Gastrointestinal Endoscopic Surgeons, San Antonio, TX, April, 2011.

Schoen, J.A., Sliker, L., **Rentschler, M.E.**, “*A Locomotion System for Capsule Mobility*,” The Society of American Gastrointestinal Endoscopic Surgeons, San Antonio, TX, April, 2011.

Schoen, J.A., Terry, B.S., Mills, A., **Rentschler, M.E.**, “*Single Incision Laparoscopic Surgery with a Novel Port Camera System*,” The Society of American Gastrointestinal Endoscopic Surgeons, Landover, MD, April, 2010.

Macdonald, S., **Rentschler, M.**, “*An Improved Splint Design for Boutonniere Deformity*,” ASME Summer Bioengineering Conference, Lake Tahoe, CA, June, 2009.

Ruppert, A., Terry, B., **Rentschler, M.**, “*A Laparoscopic Camera-Enabled Cannula Port*,” ASME Summer Bioengineering Conference, Lake Tahoe, CA, June, 2009.

Lehman, A., Dumpert, J., Visty, A., **Rentschler, M.**, Farritor, S., Oleynikov, D., "Toward Natural Orifice Surgery with Cooperative Miniature Robots," The Society of American Gastrointestinal and Endoscopic Surgeons, Philadelphia, PA, April, 2008.

Rentschler, M., Baxter, B.T., "Preliminary Murine Aortic Tissue Material Properties from Pressure-Diameter Experiments," ASME Summer Bioengineering Conference, Keystone, CO, June, 2007.

Platt, S., **Rentschler, M.**, Dumpert, J., Farritor, S., Oleynikov, D., "In Vivo Robotic Cameras Can Enhance Imaging Capability During Laparoscopic Surgery," The Society of American Gastrointestinal Endoscopic Surgeons, Fort Lauderdale, FL, April, 2005.

Patents

- U.S. Patent No: 7,960,935; Issued June 14, 2011, "Robotic Devices with Agent Delivery Components and Related Methods"
(with S. Farritor, D. Oleynikov, S. Platt, J. Dumpert, A. Hadzialic, and N. Wood)
- U.S. Patent No: 7,772,796; Issued August 10, 2010, "Robotic Devices with Agent Delivery Components and Related Methods"
(with S. Farritor, D. Oleynikov, S. Platt, J. Dumpert, and A. Hadzialic)
- U.S. Patent No: 7,372,229; Issued May 13, 2008, "Robot for Surgical Applications"
(with S. Farritor, D. Oleynikov, S. Platt, and J. Dumpert)
- U.S. Patent No: 7,339,341; Issued March 4, 2008, "Surgical Camera Robot"
(with D. Oleynikov, S. Farritor, S. Platt, and J. Dumpert)
- U.S. Patent No: 7,126,303; Issued October 24, 2006, "Robot for Surgical Applications"
(with S. Farritor, D. Oleynikov, S. Platt, and J. Dumpert)

Teaching Experience

Course Instructor

University of Colorado at Boulder
Department of Mechanical Engineering

MCEN 5228 Medical Device Design

Instructor *Spring, 2011*
Course Developer & Instructor *Spring, 2010*

MCEN 5228 Advanced Product Design

Course Developer & Lead Instructor *Spring, 2011*
Course Developer & Co-Instructor *Spring, 2010*

MCEN 5228 Graduate Product Design I(Projects Course 1)

Course Developer & Co-Instructor *Fall, 2010*
Faculty Advisor for one team *Fall, 2010*

MCEN 5228 Graduate Product Design II (Projects Course 2)

Course Developer & Co-Instructor *Spring, 2011*
Faculty Advisor for one team *Spring, 2011*

MCEN 4045 ME Design Project 1 (Senior Design I)

Faculty Advisor for two teams *Fall, 2010*
Faculty Advisor for three teams *Fall, 2009*
Faculty Advisor for three teams *Fall, 2008*

MCEN 4085 ME Design Project 2 (Senior Design II)

Faculty Advisor for two teams *Spring, 2011*
Faculty Advisor for three teams *Spring, 2010*
Faculty Advisor for three teams *Spring, 2009*