Sylvain Martel

List of Publications by Year
in descending order

Source: https://exaly.com/author-pdf/9208982/publications.pdf

Version: 2024-02-01

130 papers	5,766 citations	147566 31 h-index	82410 72 g-index
132 all docs	132 docs citations	132 times ranked	4780 citing authors

#	Article	IF	Citations
1	Magneto-aerotactic bacteria deliver drug-containing nanoliposomes to tumour hypoxic regions. Nature Nanotechnology, 2016, 11, 941-947.	15.6	810
2	Flagellated Magnetotactic Bacteria as Controlled MRI-trackable Propulsion and Steering Systems for Medical Nanorobots Operating in the Human Microvasculature. International Journal of Robotics Research, 2009, 28, 571-582.	5.8	458
3	Medical roboticsâ€"Regulatory, ethical, and legal considerations for increasing levels of autonomy. Science Robotics, 2017, 2, .	9.9	349
4	Biohybrid actuators for robotics: A review of devices actuated by living cells. Science Robotics, 2017, 2, .	9.9	334
5	Automatic navigation of an untethered device in the artery of a living animal using a conventional clinical magnetic resonance imaging system. Applied Physics Letters, 2007, 90, 114105.	1.5	305
6	Controlled manipulation and actuation of micro-objects with magnetotactic bacteria. Applied Physics Letters, 2006, 89, 233904.	1.5	278
7	MRI-based Medical Nanorobotic Platform for the Control of Magnetic Nanoparticles and Flagellated Bacteria for Target Interventions in Human Capillaries. International Journal of Robotics Research, 2009, 28, 1169-1182.	5.8	244
8	Co-encapsulation of magnetic nanoparticles and doxorubicin into biodegradable microcarriers for deep tissue targeting by vascular MRI navigation. Biomaterials, 2011, 32, 3481-3486.	5.7	223
9	Method of Propulsion of a Ferromagnetic Core in the Cardiovascular System Through Magnetic Gradients Generated by an MRI System. IEEE Transactions on Biomedical Engineering, 2006, 53, 292-299.	2.5	211
10	Covalent Binding of Nanoliposomes to the Surface of Magnetotactic Bacteria for the Synthesis of Self-Propelled Therapeutic Agents. ACS Nano, 2014, 8, 5049-5060.	7.3	199
11	Magnetic nanoparticles encapsulated into biodegradable microparticles steered with an upgraded magnetic resonance imaging system for tumor chemoembolization. Biomaterials, 2009, 30, 6327-6332.	5.7	124
12	Remote control of the permeability of the bloodâ€"brain barrier by magnetic heating of nanoparticles: A proof of concept for brain drug delivery. Journal of Controlled Release, 2015, 206, 49-57.	4.8	118
13	Real-Time MRI-Based Control of a Ferromagnetic Core for Endovascular Navigation. IEEE Transactions on Biomedical Engineering, 2008, 55, 1854-1863.	2.5	113
14	Bacterial microsystems and microrobots. Biomedical Microdevices, 2012, 14, 1033-1045.	1.4	108
15	Magnetic microparticle steering within the constraints of an MRI system: proof of concept of a novel targeting approach. Biomedical Microdevices, 2007, 9, 801-808.	1.4	95
16	Steering of aggregating magnetic microparticles using propulsion gradients coils in an MRI Scanner. Magnetic Resonance in Medicine, 2010, 63, 1336-1345.	1.9	94
17	Using a swarm of self-propelled natural microrobots in the form of flagellated bacteria to perform complex micro-assembly tasks. , 2010, , .		86
18	In Vivo MR-Tracking Based on Magnetic Signature Selective Excitation. IEEE Transactions on Medical Imaging, 2008, 27, 28-35.	5.4	75

#	Article	IF	Citations
19	Three-dimensional remote aggregation and steering of magnetotactic bacteria microrobots for drug delivery applications. International Journal of Robotics Research, 2014, 33, 359-374.	5.8	75
20	Multifunctional Self-Assembled Supernanoparticles for Deep-Tissue Bimodal Imaging and Amplified Dual-Mode Heating Treatment. ACS Nano, 2019, 13, 408-420.	7.3	68
21	Using the fringe field of a clinical MRI scanner enables robotic navigation of tethered instruments in deeper vascular regions. Science Robotics, 2019, 4, .	9.9	65
22	Shrinkable Hydrogel-Based Magnetic Microrobots for Interventions in the Vascular Network. Advanced Robotics, 2011, 25, 1049-1067.	1.1	49
23	Beyond imaging: Macro- and microscale medical robots actuated by clinical MRI scanners. Science Robotics, 2017, 2, .	9.9	47
24	Aggregation of magnetic microparticles in the context of targeted therapies actuated by a magnetic resonance imaging system. Journal of Applied Physics, 2009, 106, .	1.1	46
25	Therapeutic Magnetic Microcarriers Guided by Magnetic Resonance Navigation for Enhanced Liver Chemoembilization: A Design Review. Annals of Biomedical Engineering, 2014, 42, 929-939.	1.3	43
26	Assessment of navigation control strategy for magnetotactic bacteria in microchannel: toward targeting solid tumors. Biomedical Microdevices, 2013, 15, 1015-1024.	1.4	42
27	Adapting the clinical MRI software environment for realâ€time navigation of an endovascular untethered ferromagnetic bead for future endovascular interventions. Magnetic Resonance in Medicine, 2008, 59, 1287-1297.	1.9	41
28	Characterization of the deflections of a catheter steered using a magnetic resonance imaging system. Medical Physics, 2011, 38, 4994-5002.	1.6	40
29	Magnetic Navigation Control of Microagents in the Vascular Network: Challenges and Strategies for Endovascular Magnetic Navigation Control of Microscale Drug Delivery Carriers. IEEE Control Systems, 2013, 33, 119-134.	1.0	39
30	Magnetic Photoluminescent Nanoplatform Built from Large-Pore Mesoporous Silica. Chemistry of Materials, 2019, 31, 3201-3210.	3.2	34
31	Dipole Field Navigation: Theory and Proof of Concept. IEEE Transactions on Robotics, 2015, 31, 1353-1363.	7.3	33
32	Microrobotics in the vascular network: present status and next challenges. Journal of Micro-Bio Robotics, 2013, 8, 41-52.	2.1	31
33	Exploiting the responses of magnetotactic bacteria robotic agents to enhance displacement control and swarm formation for drug delivery platforms. International Journal of Robotics Research, 2017, 36, 1195-1210.	5.8	31
34	Magnetic nanoparticles in medical nanorobotics. Journal of Nanoparticle Research, 2015, 17, 1.	0.8	30
35	A computer-assisted protocol for endovascular target interventions using a clinical MRI system for controlling untethered microdevices and future nanorobots. Computer Aided Surgery, 2008, 13, 340-352.	1.8	28
36	Patterns of bacterial motility in microfluidics-confining environments. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	3.3	28

#	Article	IF	Citations
37	Controlled Bacterial Micro-actuation. , 2006, , .		27
38	Swimming microorganisms acting as nanorobots versus artificial nanorobotic agents: A perspective view from an historical retrospective on the future of medical nanorobotics in the largest known three-dimensional biomicrofluidic networks. Biomicrofluidics, 2016, 10, 021301.	1.2	27
39	Development of a Coflowing Device for the Size-Controlled Preparation of Magnetic-Polymeric Microspheres as Embolization Agents in Magnetic Resonance Navigation Technology. ACS Biomaterials Science and Engineering, 2018, 4, 1092-1102.	2.6	27
40	Magnetic Resonance Navigation of a Bead Inside a Three-Bifurcation PMMA Phantom Using an Imaging Gradient Coil Insert. IEEE Transactions on Robotics, 2014, 30, 719-727.	7.3	26
41	Magnetic Resonance Navigation for Targeted Embolization in a Two-Level Bifurcation Phantom. Annals of Biomedical Engineering, 2019, 47, 2402-2415.	1.3	26
42	Towards MR-navigable nanorobotic carriers for drug delivery into the brain. , 2012, , 727-732.		25
43	PCB-Integrated Heat Exchanger for Cooling Electronics Using Microchannels Fabricated With the Direct-Write Method. IEEE Transactions on Components and Packaging Technologies, 2008, 31, 869-874.	1.4	24
44	Catheter steering using a Magnetic Resonance Imaging system. , 2010, 2010, 1874-7.		22
45	In vivo demonstration of magnetic guidewire steerability in a MRI system with additional gradient coils. Medical Physics, 2015, 42, 969-976.	1.6	22
46	Magnetic Steering of Iron Oxide Microparticles Using Propulsion Gradient Coils in MRI. , 2006, 2006, 472-5.		20
47	A MRI-based integrated platform for the navigation of micro-devices and microrobots. , 2011, , .		20
48	MR Imaging of Therapeutic Magnetic Microcarriers Guided by Magnetic Resonance Navigation for Targeted Liver Chemoembolization. CardioVascular and Interventional Radiology, 2014, 37, 784-790.	0.9	20
49	Enabling automated magnetic resonance imaging-based targeting assessment during dipole field navigation. Applied Physics Letters, 2016, 108, .	1.5	19
50	Targeting active cancer cells with smart bullets. Therapeutic Delivery, 2017, 8, 301-312.	1.2	19
51	Interventional procedure based on nanorobots propelled and steered by flagellated Magnetotactic Bacteria for direct targeting of tumors in the human body. , 2008, 2008, 2497-500.		18
52	A Feasibility Study for Microwave Breast Cancer Detection Using Contrast-Agent-Loaded Bacterial Microbots. International Journal of Antennas and Propagation, 2013, 2013, 1-11.	0.7	18
53	Hyperthermia of magnetic nanoparticles allows passage of sodium fluorescein and Evans blue dye across the bloodâ€“retinal barrier. International Journal of Hyperthermia, 2016, 32, 657-665.	1.1	16
54	Selective embolization with magnetized microbeads using magnetic resonance navigation in a controlledâ€flow liver model. Medical Physics, 2019, 46, 789-799.	1.6	16

#	Article	IF	Citations
55	Tumor targeting by computer controlled guidance of Magnetotactic Bacteria acting like autonomous microrobots. , 2011, , .		15
56	Switching between Magnetotactic and Aerotactic Displacement Controls to Enhance the Efficacy of MC-1 Magneto-Aerotactic Bacteria as Cancer-Fighting Nanorobots. Micromachines, 2016, 7, 97.	1.4	15
57	Magnetotactic bacteria penetration into multicellular tumor spheroids for targeted therapy. , 2010, 2010, 4371-4.		14
58	Vessel-based registration of an optical shape sensing catheter for MR navigation. International Journal of Computer Assisted Radiology and Surgery, 2016, 11, 1025-1034.	1.7	14
59	In vivo validation of a propulsion method for untethered medical microrobots using a clinical magnetic resonance imaging system. , 2007, , .		13
60	Towards swarms of communication-enabled and intelligent sensotaxis-based bacterial microrobots capable of collective tasks in an aqueous medium. , 2009, , .		13
61	Computer 3D controlled bacterial transports and aggregations of microbial adhered nano-components. Journal of Micro-Bio Robotics, 2014, 9, 23-28.	2.1	13
62	MRI-Compatible Injection System for Magnetic Microparticle Embolization. IEEE Transactions on Biomedical Engineering, 2019, 66, 2331-2340.	2.5	13
63	Towards MRI-Controlled Ferromagnetic and MC-1 Magnetotactic Bacterial Carriers for Targeted Therapies in Arteriolocapillar Networks Stimulated by Tumoral Angiogenesis. , 2006, 2006, 3399-402.		11
64	A robotic micro-assembly process inspired by the construction of the ancient pyramids and relying on several thousand flagellated bacteria acting as micro-workers. , 2009, , .		11
65	Evaluation of the Potential of Dipole Field Navigation for the Targeted Delivery of Therapeutic Agents in a Human Vascular Network. IEEE Transactions on Magnetics, 2018, 54, 1-12.	1.2	10
66	A Piezoelectric Robotic System for MRI Targeting Assessments of Therapeutics During Dipole Field Navigation. IEEE/ASME Transactions on Mechatronics, 2021, 26, 214-225.	3.7	10
67	Medical and Technical Protocol for Automatic Navigation of a Wireless Device in the Carotid Artery of a Living Swine Using a Standard Clinical MRI System. , 2007, 10, 144-152.		10
68	High-Precision Absolute Positioning of Medical Instruments in MRI Systems. , 2006, 2006, 743-6.		9
69	Encapsulation of magnetotactic bacteria for targeted and controlled delivery of anticancer agents for tumor therapy. , 2011, 2011, 6668-71.		9
70	Corrosion study of single crystal Niâ€“Mnâ€“Ga alloy and Tb0.27Dy0.73Fe1.95 alloy for the design of new medical microdevices. Journal of Materials Science: Materials in Medicine, 2011, 22, 237-245.	1.7	9
71	Fringe Field Navigation for Catheterization. IFMBE Proceedings, 2015, , 379-382.	0.2	9
72	Micro-photovoltaic cells designed for magnetotaxis-based controlled bacterial microrobots. IEICE Electronics Express, 2008, 5, 101-106.	0.3	8

#	Article	IF	Citations
73	Corrosion study of ironâ€cobalt alloys for MRIâ€based propulsion embedded in untethered microdevices operating in the vascular network. Journal of Biomedical Materials Research - Part B Applied Biomaterials, 2010, 93B, 203-211.	1.6	8
74	Advantages and limitations of the various magnetic manipulation methods of untethered agents in the human body. , 2014, , .		8
75	Biocompatibility of Candidate Materials for the Realization of Medical Microdevices. , 2006, , .		7
76	Real-time positioning and tracking technique for endovascular untethered microrobots propelled by MRI gradients. , 2009, , .		7
77	Magnetic propulsion of a spiral-type endoscopic microrobot in a real small intestine. , 2012, , .		7
78	Combining oscillating flow and clinical MRI gradients for targeted therapy. , 2017, , .		7
79	Navigation of Microrobots by MRI: Impact of Gravitational, Friction and Thrust Forces on Steering Success. Annals of Biomedical Engineering, 2021, 49, 3724-3736.	1.3	7
80	Annealing of magnetic nanoparticles for their encapsulation into microcarriers guided by vascular magnetic resonance navigation. Journal of Nanoparticle Research, 2012, 14, 1.	0.8	6
81	Presenting a New Paradigm in Cancer Therapy : Delivering therapeutic agents using navigable microcarriers.. IEEE Pulse, 2014, 5, 48-55.	0.1	6
82	Trajectory planning for vascular navigation from 3D angiography images and vessel centerline data. , 2017, , .		6
83	Design of Photovoltaic Cells to Power Control Electronics Embedded in Untethered Aqueous Microrobots Propelled by Bacteria. , 2006, , .		5
84	Microrobotic navigable entities for Magnetic Resonance Targeting. , 2010, 2010, 1942-5.		5
85	Dynamic tracking of magnetic nanoparticles for mapping microvascular networks using a clinical 1.5 T magnetic resonance scanner. Applied Physics Letters, 2014, 104, .	1.5	5
86	A Progressive Multidimensional Particle Swarm Optimizer for magnetic core placement in Dipole Field Navigation. , 2016, , .		5
87	Magnetic Resonance Propulsion, Control and Tracking at 24 Hz of an Untethered Device in the Carotid Artery of a Living Animal: An Important Step in the Development of Medical Micro- and Nanorobots. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2007, 2007, 1475-8.	0.5	4
88	Locomotion of a miniature robot based on synchronized vibrating actuation mechanisms. , 2007, , .		4
89	Acting on nanoparticles embedded in magnetotactic bacteria to implement propulsion and steering for microrobots. , 2007, , .		4
90	Experimental demonstration of a swimming robot propelled by the gradient field of a Magnetic Resonance Imaging (MRI) system. , 2010, , .		4

#	Article	IF	Citations
91	Temperature Response of a Magnetic Resonance Imaging Coil Insert for the Navigation of Theranostic Agents in Complex Vascular Networks. IEEE Transactions on Magnetics, 2014, 50, 1-7.	1.2	4
92	Learning from our failures in bloodâ€“brain permeability: what can be done for new drug discovery?. Expert Opinion on Drug Discovery, 2015, 10, 207-211.	2.5	4
93	Magnetic Fringe Field Navigation of a guidewire based on Thin Plate Spline modeling. , 2016, , .		4
94	A prototype of injector to control and to detect the release of magnetic beads within the constraints of multibifurcation magnetic resonance navigation procedures. Magnetic Resonance in Medicine, 2017, 77, 444-452.	1.9	4
95	MRI-based magnetic navigation of nanomedical devices for drug delivery and hyperthermia in deep tissues. , 2007, , .		3
96	Embedding a wireless transmitter within the space and power constraints of an electronic untethered microrobot. , 2009, , .		3
97	Preliminary design of a SIMO fuzzy controller for steering microparticles inside blood vessels by using a magnetic resonance imaging system. , 2011, 2011, 920-3.		3
98	Toward nonsystemic delivery of therapeutics across the bloodâ€“brain barrier. Nanomedicine, 2015, 10, 2129-2131.	1.7	3
99	MRI-based communication for untethered intelligent medical microrobots. Journal of Micro-Bio Robotics, 2015, 10, 27-35.	2.1	3
100	Improved three-dimensional remote aggregations of magnetotactic bacteria for tumor targeting. , 2016, , .		3
101	NANOROBOTS FOR MICROFACTORIES TO OPERATIONS IN THE HUMAN BODY AND ROBOTS PROPELLED BY BACTERIA. Facta Universitatis Series, Mechanics, Automatic Control and Robotics, 2008, 7, 1-8.	0.0	3
102	Miniaturization of a Piezo-Actuation System Embedded in an Instrumented Autonomous Robot. , 2006, , .		2
103	MR imaging of Fe-Co nanoparticles, magnetotactic bacteria and Fe3O4 microparticles for future drug delivery applications. , 2007, , .		2
104	A comparative study between MC-1 Cells and magnetic microparticles used for enhanced target delivery of therapeutic agents in the microvasculature. , 2008, , .		2
105	Robotic platform for real-time tracking of a single fast swimming bacterium. , 2010, , .		2
106	Signal and image processing in medical nanorobotics: The art of tracking and imaging therapeutics navigated in the vascular network towards the region to be treated. , 2012, , .		2
107	Measuring the magnetophoretic characteristics of magnetic agents for targeted diagnostic or therapeutic interventions in the vascular network. Journal of Micro-Bio Robotics, 2013, 8, 65-71.	2.1	2
108	Threeâ€dimensional reconstruction of a vascular network by dynamic tracking of magnetite nanoparticles. Medical Physics, 2015, 42, 5702-5710.	1.6	2

#	Article	IF	Citations
109	Characterizations of magnetotactic bacteria conjugated versus unconjugated with carboxylate-Functionalized superparamagnetic iron oxide nanoparticles for tumor targeting purposes. , 2017, , .		2
110	Future Advances in Diagnosis and Drug Delivery in Interventional Radiology Using MR Imagingâ€“Steered Theranostic Iron Oxide Nanoparticles. Journal of Vascular and Interventional Radiology, 2021, 32, 1292-1295.e1.	0.2	2
111	Poly(N-isopropylacrylamide) beads synthesis with nanoparticles embedded for the implementation of shrinkable medical microrobots for biomedical applications. , 2010, 2010, 3800-3.		1
112	Aggregates of Synthetic Microscale Nanorobots versus Swarms of Computer-Controlled Flagellated Bacterial Robots for Target Therapies through the Human Vascular Network. , 2010, , .		1
113	3D reconstruction of microvasculature in MRI using magnetic microparticles. , 2012, , .		1
114	Characterization by magnetophoresis of therapeutic microcarriers relying on embedded nanoparticles to allow navigation in the vascular network. , 2012, , .		1
115	A new communication method for untethered intelligent microrobots. , 2013, , .		1
116	Magnetotactic bacteria as dispatched oxygen sensors. , 2013, , .		1
117	Therapeutic Bacterial Nanorobots for Targeted Drug Delivery Deep Inside Tumors. , 2013, , 323-329.		1
118	Comparative study of the various control approaches for the navigation of untethered agents in the vascular network. , 2014, , .		1
119	Tumor targeting by computer controlled guidance of Magnetotactic Bacteria acting like autonomous microrobots. , 2011, , .		1
120	Computer 3D controlled bacterial transports and aggregations of microbial adhered nano-components. , 2013, , .		0
121	Assessment of the Accuracy of Optical Shape Sensing for Needle Tracking Interventions. Journal of Medical Devices, Transactions of the ASME, 2017, 11, .	0.4	0
122	Nanorobotics for Targeted Medical Interventions. , 2013, , 517-542.		0
123	INTRODUCTION: MEDICAL MICRO- AND NANOROBOTICS. , 2018, , 1-16.		0
124	High-Precision Absolute Positioning of Medical Instruments in MRI Systems. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2006, , .	0.5	0
125	Ferromagnetic Artifacts in MRI: Minimization of Motion Effects in Long TR Acquisitions. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2006, , .	0.5	0
126	System for the Validation of Cell-Tracking Algorithms Using On-Demand Simulated Optical Microscope Images. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2006, , .	0.5	0

#	Article	IF	Citations
127	Biocompatibility of Candidate Materials for the Realization of Medical Microdevices. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2006, , .	0.5	0
128	Towards MRI-Controlled Ferromagnetic and MC-1 Magnetotactic Bacterial Carriers for Targeted Therapies in Arteriolocapillar Networks Stimulated by Tumoral Angiogenesis. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2006, , .	0.5	0
129	Preliminary Investigation of Bio-carriers Using Magnetotactic Bacteria. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2006, , .	0.5	0
130	Bidimensional MRI-based Navigation System Using a PID Controller. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2006, , .	0.5	0