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Employment

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Research outputs

Laser Structured Silicon Based Multi Fourier Horn Resonator

Al-Mogahed, W., Voigt, S., Mehner, P. J., Paschew, G., Richter, A. & Mehner, J., 28 May 2023, *2023 Symposium on Design, Test, Integration & Packaging of MEMS/MOEMS (DTIP)*.

Fundamentals of Hydrogel-Based Valves and Chemofluidic Transistors for Lab-on-a-Chip Technology: A Tutorial Review

Beck, A., Obst, F., Gruner, D., Voigt, A., Mehner, P. J., Gruenzner, S., Koerbitz, R., & 5 othersShahadha, M. H., Kutscher, A., Paschew, G., Marschner, U. & Richter, A., 10 Feb 2023, In: *Advanced materials technologies*. 8, 3, 2200417.

Analogies Between Stimuli-Responsive (Smart) Hydrogel-Based Microfluidic Valves and Electronic Transistors

Marschner, U., Beck, A., Mehner, P. J., Paschew, G., Voigt, A. & Richter, A., 12 Sept 2022, *Proceedings of ASME 2022 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS 2022*. V001T03A012

Logic Circuits Based on Chemical Volume Phase Transition Transistors for Planar Microfluidics and Lab-on-a-Chip Automation

Beck, A., Mehner, P. J., Voigt, A., Obst, F., Marschner, U. & Richter, A., Jul 2022, In: *Advanced materials technologies*. 7, 11, 11 p., 2200185.

Temperature profile and residual heat of monopolar laparoscopic and endoscopic dissection instruments

Brinkmann, F., Hüttner, R., Mehner, P. J., Henkel, K., Paschew, G., Herzog, M., Martens, N., & 7 othersRichter, A., Hinz, S., Groß, J., Schafmayer, C., Hampe, J., Hendricks, A. & Schwandtner, F., 17 Oct 2021, In: *Surgical endoscopy*. 2021

Enzymatic Synthesis of Sialic Acids in Microfluidics to Overcome Cross-Inhibitions and Substrate Supply Limitations

Obst, F., Mertz, M., Mehner, P. J., Beck, A., Castiglione, K., Richter, A., Voit, B., & 1 othersAppelhans, D., 6 Oct 2021, In: *ACS applied materials & interfaces*. 13, 41, p. 49433–49444

Combined Finite Element and Network Model of Embedded Shape Memory Alloy Actuators for Endoscopic Tools With an Efficient Dynamic Thermo-Electro-Mechanical Design Process

Mehner, P. J., Hüttner, R., Henkel, K., Körbitz, R., Brinkmann, F., Fischer, M., Uhlig, K., & 4 othersMehner, J., Hampe, J., Marschner, U. & Richter, A., 14 Sept 2021, *ASME 2021 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*.

NANOWIRE EVALUATION SYSTEMS AND METHODS FOR PREDICTING BEHAVIOR OF HYDROGELS AND MICROSYSTEM APPLICATION

Stadler, B. J. H., Mehner, P. J., Kohl, K. & Richter, A., 11 Mar 2021, Patent No. US 2021/0072229 A1

Modeling and Simulation of Components and Circuits with Intrinsically Active Polymers

Mehner, P. J., 4 Feb 2021

Hydrogel Patterns in Microfluidic Devices by Do-It-Yourself UV-Photolithography Suitable for Very Large-Scale Integration

Beck, A., Obst, F., Busek, M., Grünzner, S., Mehner, P. J., Paschew, G., Appelhans, D., & 2 othersVoit, B. & Richter, A., 2 May 2020, In: *Micromachines*. 11, 5, 20 p., 479.

Hydrogel Microvalves as Control Elements for Parallelized Enzymatic Cascade Reactions in Microfluidics

Obst, F., Beck, A., Bishayee, C., Mehner, P. J., Richter, A., Voit, B. & Appelhans, D., 5 Feb 2020, In: *Micromachines*.

One-step photostructuring of multiple hydrogel arrays for compartmentalized enzyme reactions in microfluidic devices

Obst, F., Simon, D., Mehner, P. J., Neubauer, J. W., Beck, A., Stroyuk, O., Richter, A., & 2 othersVoit, B. & Appelhans, D. , 1 Dec 2019, In: *Reaction chemistry & engineering*. 4, 12, p. 2141-2155 15 p.

Description of a Hydrogel-Based Micro-Valve As a Library Element for Matlab Simulink

Mehner, P. J., Beck, A., Busek, M., Voigt, A., Marschner, U. & Richter, A., 9 Sept 2019, *ASME 2019 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*.

**Towards a matlab toolbox for microfluidic logic gate design combining finite element and network simulation methods
Konferenzbericht**

Mehner, P. J., Bakardjiev, P., Beck, A., Reim, M., Busek, M., Voigt, A., Marschner, U., & 1 othersRichter, A., 2019, *EuroEAP 2019*.

Modeling Hydrogel-Controlled Micro-Reactors for Enzyme Assays With Finite Elements for Improved Flow and Filling Distribution

Mehner, P. J., Obst, F., Simon, D., Tang, J., Beck, A., Gruner, D., Busek, M., & 4 othersAppelhans, D., Marschner, U., Voit, B. & Richter, A., Sept 2018, *Volume 1: Development and Characterization of Multifunctional Materials; Modeling, Simulation, and Control of Adaptive Systems; Integrated System Design and Implementation*.

Reduced order model of a hydrogel-based microvalve with pressure, flow and concentration correlations

Mehner, P. J., Beck, A., Voigt, A., Marschner, U. & Richter, A., May 2018, *2018 Symposium on Design, Test, Integration & Packaging of MEMS and MOEMS (DTIP)*.

Enzyme Immobilisation in Microfluidic Chips for Biocatalytic Conversions

Obst, F., Beck, A., Mehner, P. J., Simon, D., Richter, A., Voit, B. & Appelhans, D., 2018, *Tagungsband des 19. Heiligenstädter Kolloquiums*. Heilbad Heiligenstadt: Institut für Bioprozess- und Analysenmesstechnik e.V, p. 265 1 p.

Electrically Tunable Dye Emission via Microcavity Integrated PDMS Gel Actuator

Franke, M., Slowik, I., Mehner, P. J., Paschew, G., Voigt, A., Froeb, H., Leo, K., & 1 othersRichter, A., 30 Aug 2017, In: *ACS applied materials & interfaces*. 9, 34, p. 29193-29202

Dynamic Finite Element Modelling of a Hydrogel-Based Micro-Valve With 2-Way Fluid Structure Interactions

Mehner, P. J., Beck, A., Voigt, A., Marschner, U. & Richter, A., 2017, *Volume 2: Modeling, Simulation and Control of Adaptive Systems; Integrated System Design and Implementation; Structural Health Monitoring* . SMASIS2017-3859

Entwurf und Kombinierte Simulation eines Oszillators mit chemisch gesteuerten Hydrogel-basierten Mikroventil

Mehner, P. J., 2015

Toward engineering biological tissues by directed assembly and origami folding

Mehner, P. J., Liu, T., Larimi, M. B., University, N., University, N., University, N., University, N., & 7 othersUniversity, N., University, N., Alperin, R. C., Bhatia, S., Culpepper, M., Lang, R. J. & University, N., 2015, *Origami⁶*.