

Benoît CHARLOT, Publications, september 2022

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1. Articles de journaux

- [1] J.Eid, M.Socol, A.Naillon, J.Feuillard, L.Ciandrini, E.Margeat, **B.Charlot**, M.Mougel, “Viro-fluidics: Real-time analysis of virus production kinetics at the single-cell level,” *Biophysical Reports*, 100068, 2022. <https://doi.org/10.1016/j.bpr.2022.100068>.
- [2] T.Xu, M.A.Lizarralde-Iragorri, **B.Charlot**, J.Roman, O.Français, W.El Nemer, B.Le Pioufle, “Bioimpedance single cell sensing of low and high density sickle erythrocytes using microfluidics”, *Biosensors and Bioelectronics: X*, Vol.10, 100140, 2022. <https://doi.org/10.1016/j.biosx.2022.100140>
- [3] P.Duc, M.Vignes, G.Hugon, A.Sebban, G.Carnac, E.Malyshev, **B.Charlot**, F.Rage, “Human neuromuscular junction on micro-structured microfluidic devices implemented with a custom micro electrode array (MEA)”, *Lab Chip*, 2021. <https://doi.org/10.1039/D1LC00497B>
- [4] C.Jolly, A.Gomez, D.Sánchez-Fuentes, D.Cakiroglu, R.Rathar, N.Maurin, R.Garcia-Bermejo, **B.Charlot**, M.Gich, M.Bahriz, L.Picas, A.Carretero-Genevri, “Soft-Chemistry-Assisted On-Chip Integration of Nanostructured α -Quartz Microelectromechanical System”, *Advanced Materials Technologies*, 2000831, (2021). <https://doi.org/10.1002/admt.202000831>
- [5] A.S.Dahiya, T.Gil, J.Thireau, N.Azemard, A.Lacampagne, **B.Charlot**, A.Todri-Sanial "1D Nanomaterial-Based Highly Stretchable Strain Sensors for Human Movement Monitoring and Human–Robotic Interactive Systems", *Advanced Electronic Materials*, (2020). doi : 10.1002/aelm.202000547
- [6] Q.Zhang, D.Sanchez-Fuentes, R.Desgarceaux, A.Gomez, P.Escofet-Majoral, J.Oro-solé, J.Gázquez, G.Larrieu, **B.Charlot**, A.Gomez, M.Gich, A.Carretero-Genevri, “Micro/Nanostructure engineering of epitaxial piezoelectric α -quartz thin films on silicon”, *ACS Appl. Mater. Interfaces*, 12, 4, 4732–4740 (2020), doi : 10.1021/acsami.9b18555
- [7] R.Desgarceaux, Z.Santybayeva, E.Battistella, A.L.Nord, C.Braun-Breton, M.Abkarian, O.M.Maragò, **B.Charlot**, F.Pedaci, "High-Resolution Photonic Force Microscopy Based on Sharp Nanofabricated Tips", *Nano Letters*, 20, 6, 4249–4255 (2020). doi : 10.1021/acs.nanolett.0c00729
- [8] M.Bomers, **B.Charlot**, F.Barho, A.Chanuel, A.Mezy, L.Cerutti, F.Gonzalez-Posada, T. Taliercio “Microfluidic surface-enhanced infrared spectroscopy with semiconductor plasmonics for the fingerprint region”, *RSC Reaction Chemistry & Engineering*, 5, 124-135, (2020), doi: 10.1039/C9RE00350A
- [9] A.S.Dahiya, M.Dhifallah, N.Ullberg, J.Thireau, J.Boudaden, S.Lal, T.Gil, N.Azemard, P.Ramm, T.Kiessling, C.O'Murchu, C.Glynn, M.Morrissey, F.Sebelius, J.Tilly, U.Gulzar, C.O'Dwyer, K.M. Razeeb, A.Lacampagne, and **B.Charlot**, A.Todri-Sanial, “Energy autonomous wearable sensors for smart healthcare: A Review”, *Journal of The Electrochemical Society*, 167-3, (2019), doi: 10.1149/2.0162003JES
- [10] Q.Zhang, D.Sánchez-Fuentes, A.Gómez, R.Desgarceaux, **B.Charlot**, J.Gázquez, A.Carretero-Genevri, M.Gich, “Tailoring the crystal growth of quartz on silicon for patterning epitaxial piezoelectric films”, *Nanoscale Advances*, 1, 3741-3752, (2019), doi : 10.1039/C9NA00388F
- [11] M.Fenech, V.Girod, S.Meance, V.Claveria, M.Abkarian, **B.Charlot**, “Microfluidic blood vasculature replicas using backside photolithography”, *Lab Chip*, 19, 2096-2106, (2019), doi : 110.1039/c9lc00254e
- [12] E.Moutaux, **B.Charlot**, A.Genoux, F.Saudou, M.Cazorla, “An integrated microfluidic/microelectrode array for the study of activity-dependent intracellular dynamics in neuronal networks”, *Lab Chip* 18, pp. 3425-3435, (2018), doi: 10.1039/c8lc00694f
- [13] E.Moutaux, W.Christaller, C.Scaramuzzino, A.Genoux, **B.Charlot**, M.Cazorla, F.Saudou, “Neuronal network maturation differently affects axonal transport of secretory vesicles and mitochondria”, *Scientific Reports*, 8:13429, (2018), doi: 10.1038/s41598-018-31759-x

- [14] D.Coglitore, N.Giamblanco, A.Kizalaite, P.E.Coulon, **B.Charlot**, J.M.Janot, S.Balme, “Unexpected Hard Protein Behavior of BSA on Gold Nanoparticle Caused by Resveratrol”, *Langmuir* 34 (30), pp 8866–8874 (2018), doi : 10.1021/acs.langmuir.8b01365
- [15] N.Giamblanco, D.Coglitore, J.M.Janot, P.E.Coulon, **B.Charlot**, S.Balme, “Detection of protein aggregate morphology through single antifouling nanopore”, *Sensors and Actuators B: Chemical*, 260, pp.736-745, (2018), doi: 10.1016/j.snb.2018.01.094
- [16] A.Virlogeux, E.Moutaux, W.Christaller, A.Genoux, J.Bruyère, **B.Charlot**, M.Cazorla, F.Saudou, “Reconstituting Corticostriatal Network On-a-Chip Reveals the Contribution of the Presynaptic Compartment to Huntington’s Disease”, *Cell Reports* 22-1, (2018), doi : 10.1016/j.celrep.2017.12.013
- [17] L.Lanotte, D.Laux, **B.Charlot** and M.Abkarian, “Role of red cells and plasma composition on blood sessile droplet evaporation” *Phys. Rev. E*. 96, 053114, (2017), doi: 10.1103/PhysRevE.96.053114.
- [18] M.J.Milla-Rodrigo, F.Barho, F.González-Posada, L.Cerutti, **B.Charlot**, M.Bomers, F.Neubrech, E. Tournie, T.Taliercio, “Surface-Enhanced Infrared Absorption with Si-doped InAsSb/GaSb nano-antennas”, *Optics Express*, 25(2), pp. 26651-61, (2017), doi: 10.1364/OE.25.026651
- [19] L.Paris, I.Marc, **B.Charlot**, M.Dumas, J.Valmier, F.Bardin, “Millisecond infrared laser pulses depolarize and elicit action potentials on in-vitro dorsal root ganglion neurons”, *Biomed. Opt. Express* 8, pp. 4568-78, (2017), doi: 10.1364/BOE.8.004568
- [20] A.Virlogeux, M.Cazorla, J.Bruyère, W.Christaller, A.Genoux, **B.Charlot**, F.Saudou, “B41 HD on chip: reconstituting the cortico-striatal network on microfluidics to study intracellular trafficking and synaptic transmission”, *J. Neurol Neurosurg Psychiatry* 87:Suppl 1 A23-A24, (2016), doi:10.1136/jnnp-2016-314597.72
- [21] J.Weiss, Q.Schwaab, Y.Boucetta, A.Giani, C.Guigue, P.Combette, **B.Charlot**, “Simulation and Testing of a MEMS Calorimetric Shear-Stress Sensor” *Sensors and Actuators A*. 253-1, (2016), doi:10.1016/j.sna.2016.11.018
- [22] S.Balme, P.E.Coulon, M.Lepoitevin, **B.Charlot**, N.Yandrapalli, C.Favard, D.Muriaux, M.Bechelany, J-M.Janot, “Influence of adsorption on proteins and amyloids detection by silicon nitride nanopore”, *Langmuir*, 32 (35), pp 8916–8925, (2016), doi: 10.1021/acs.langmuir.6b02048
- [23] Z.Santibayeva, A.Meghit, R.Desgarceaux, R.Teissier, F.Pichot, C.de Marin, **B.Charlot**, F.Pedaci, “Fabrication of quartz micro-cylinders by laser interference lithography for angular optical tweezers”, *J. Micro/Nanolith. MEMS MOEMS*. 15(3), 034507 (2016), doi:10.1117/1.JMM.15.3.034507
- [24] A.Leroy, C.Bony, C.Pinese, **B.Charlot**, X.Garric, D.Noël, J.Coudane, “PLA-poloxamer/poloxamine copolymers for ligament tissue engineering: sound macromolecular design for degradable scaffolds and MSC differentiation”, *Biomaterials Science*, 3, pp. 617-626, (2015), doi: 10.1039/c4bm00433g
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- [29] **B.Charlot**, G.Sassine, A.Garraud, B.Sorli, A.Giani, P.Combette, “Micropatterning PEDOT-PSS layers”, *Microsystem technologies* 19,6, pp. 895-903, (2013), doi: 10.1007/s00542-012-1696-5
- [30] A.Garraud, P.Combette, F.Pichot, J.Courteaud, **B.Charlot** and A.Giani, “Frequency response analysis of an accelerometer based on thermal convection”, *J. Micromech. Microeng.* 21 035017 (2011).
- [31] **B.Charlot**, S.Gauthier, A.Garraud, P.Combette, A.Giani, “PVDF/PMMA blend pyroelectric thin films” *J Mater Sci: Mater Electron*, 22,12, pp.1766-1771, (2011).

- [32] A.Garraud, A.Giani, P.Combette, **B.Charlot**, M.Richard, "A dual axis CMOS micromachined convective thermal accelerometer" *Sensors and Actuators A: Physical*, Vol.170, Issues 1-2, pp. 44-50, (2011), doi : 10.1088/0960-1317/21/3/035017
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- [43] S.Mir and **B.Charlot**, "From Microelectronics to Integrated Microsystems Testing", Nano et micro technologies. Hermes Science Publications, Paris, 12(1-2), pp. 249-270, (2002)
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2. Conférences invité

- [50] **B.Charlot** et al. “Micro-structured microfluidic devices implemented with a custom MEA for all human neuromuscular junctions”, Eurobiotech, 8th Central Europe Congress Life Sciences. Krakow, Poland 20-22 June 2022 .
- [51] **B.Charlot**, "Integration of Micro Electrode Array with compartmentalized microfluidics for the analysis of reconstructed neuronal junctions”, Congres BioTRACE, February 7, 2019, Montpellier, France.
- [52] **B.Charlot**, “Microfluidics and Neurosciences”, Microfluidics19 - Ecole thématique, 13-18 oct. 2019 Sète, France.
- [53] **B.Charlot**, “Thermodynamics and thermal stimulation of neurons”, PEP2018 Photothermal effects in plasmonics, Porquerolles, June 24-39, France.
- [54] **B.Charlot**, “Microfluidique et Lab On a Chip pour l’étude des écoulements sanguine”, IMHC 2016, Institut du Mouvement Humain et Cybernétique Jeudi 17 Novembre 2016, Montpellier, France.
- [55] **B.Charlot**, “Neuron - Light interaction, Action potential stimulation in neurons with infrared laser bursts”, Workshop on Thermal Nanosciences and Nanoengineering, Paris – November, 12th & 13th 2015.
- [56] **B.Charlot** “Micro mouvement, nano mouvement”, Journée “le mouvement dans tous ses états”, société de Biologie, 23 Octobre 2013, Montpellier
- [57] **B.Charlot**, W.Sun, K.Yamashita, H.Fujita and H.Toshiyoshi, “Bistable Nanowire For micromechanical memory”, The 8th Japan-France Workshop on Nanomaterials. June 15-17th, 2009, NIMS Sengen site, Tsukuba, Japan.
- [58] **B.Charlot**, “La micro thermique dans les systèmes micro-électro-mécaniques”, Congrès Français de Thermique, SFT 2005, Reims, 30 mai - 2 juin 2005.
- [59] **B.Charlot**, S.Mir, L. Rufer and B.Courtois, “On-Chip Testing of Embedded Transducers”, *IEEE System On Chip Conference, SOCC'04*, 12-15 Sept 2004, Santa Clara, CA, USA.
- [60] **B.Charlot**, “Microsystèmes thermiques et applications”, Journée thématique Micro et Nano Thermique, *Exposition de Physique*, 21-22-23 octobre 2003, Paris Expo.
- [61] **B.Charlot**, “Les microsystèmes thermiques, exemples de réalisations”, Séminaire invité, Réunion du groupe de Micro et Nanothermique de la Société Française de Thermique, Reims, Janvier 2002.

3. Conférences internationale à comité de lecture

- [62] O.Phouphetlinthong, E.Partiot, A.Sebban, R.Gaudin, **B.Charlot** “Micro Electrode Array for the monitoring of inner electrical activity of cerebral organoids”, MEA Meeting 2022 12th International Conference on Microelectrode Arrays for Life Sciences July 6-8, 2022, Tübingen, Germany. (Oral presentation)
- [63] P.Duc, A.Sebban, G.Carnac, M.Vignes, G.Hugon, **B.Charlot**, Florence Rage “Micro-structured microfluidic devices implemented with a custom MEA for all human neuromuscular junctions”, MEA Meeting 2022 12th International Conference on Microelectrode Arrays for Life Sciences July 6-8, 2022 · Tübingen, Germany. (**Best poster award**)
- [64] A.Singh Dahiya, T.Gil, N.Azemard, J.Thireau, A.Lacampagne, A.Todri-Sanial, B.Charlot, “Stretchable Strain Sensors for Human Movement Monitoring”, 2020 Symposium on Design, Test, Integration & Packaging of MEMS and MOEMS (DTIP). (Oral on line)
- [65] R.Desgarceaux, **B.Charlot**, F.Pedaci “Nano-cones and nano-cylinders fabrication for surface scanning based on optical tweezers”, Optical Trapping and Optical Micromanipulation XVI, San Diego, California, United States, August 2019. (Poster)
- [66] M.Fenech, V.Girod, S.Meance, V.Claveria, M.Abkarian, **B.Charlot**, "Microfluidic blood vasculature replicas using backside photolithography", MicroTAS 2019, The 23rd International Conference on Miniaturized Systems for Chemistry and Life Sciences (μ TAS 2019), 27-31 October 2019. (Oral presentation).
- [67] E.Puginier, K.Leal Fischer, J.Gaitan, E.Malyshev, **B.Charlot**, M.Raoux, J.Lang, “Electrical coupling in primary or clonal islet cell spheroids”, Annual Meeting of the European Association for the Study of Diabetes, Barcelona, Spain, 16-20 September 2019. Poster

- [68] **B.Charlot**, E.Moutaux, F.Bardin, E.Malyshv, F.Saudou, M.Cazorla, “Integration of Micro Electrode Array with compartmentalized microfluidics for the analysis of reconstructed neuronal junctions”, NMI MEA meeting, July 4-6, 2018, Reutlingen, Germany. Oral presentation.
- [69] R.Desgarceaux, Z.Santybayeva, F.Pedaci, **B.Charlot**, “Talbot Lithography with soft elastomeric conformal phase masks”, DTIP 2018 Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, Roma - Italy, May 22nd - May 25th, 2018. Oral Presentation.
- [70] E.Moutaux, **B.Charlot**, F.Bardin, F.Saudou, M.Cazorla, “An integrated microelectrode array and microfluidic platform for stimulating and recording reconstructed neuronal networks”, MicroTAS 2017, The 20th International Conference on Miniaturized Systems for Chemistry and, Life Sciences, Savannah, Georgia, October 22-26, 2017. Oral presentation.
- [71] **B.Charlot**, R.Desgarceaux, A.Giani, F.Bardin, “PLL-FITC Fluorescence Thermography on Dry Surfaces”, DTIP 2017, Symposium on Design Test Integration and Packaging of MEMS and MOEMS, May, 29th - June, 1st, 2017, Bordeaux, France. Oral Presentation.
- [72] L.Lanotte, D.Laux, **B.Charlot** and M.Abkarian, “Ultrasound pulse echo analysis of blood aggregation in microfluidics” MicroTAS 2016, The 20th International Conference on Miniaturized Systems for Chemistry and, Life Sciences, Dublin, Ireland, October 9-13, 2016. Poster.
- [73] Z.Santybayeva, A.Meghit, C.de Marin, R.Desgarceaux, R.Teissier, **B.Charlot** and F.Pedaci, “Birefringent quartz micro cylinders for angular optical tweezers”, MicroTAS 2016, The 20th International Conference on Miniaturized Systems for Chemistry and, Life Sciences, Dublin, Ireland, October 9-13, 2016. Poster.
- [74] Z.Santybayeva, C.de Marin, A.Meghit, R.Teissier, **B.Charlot** and F.Pedaci, “Laser Interference Lithography for the collective fabrication of quartz-microcylinders”, DTIP 2016, Symposium on Design Test Integration and Packaging of MEMS and MOEMS, Budapest - Hungary, May, 30th - June, 2nd, 2016. Oral Presentation.
- [75] G.Kock, P.Combette, **B.Charlot**, A.Giani, M. Schneider, and C. Gauthier-Blum, “Numerical study of a two-dimensional thermal convection gyroscope,” DTIP 2016, Symposium on Design Test Integration and Packaging of MEMS and MOEMS, Budapest - Hungary, May, 30th - June, 2nd, 2016.
- [76] J.Weiss, Q.Schwaab, Y.Boucetta, A.Giani, C.Guigue, P.Combette, **B.Charlot**, “Simulation and Testing of a New Type of MEMS Thermal Shear-Stress Sensor” 2nd AIAA Aerodynamic Measurement Technology and Ground Testing Conference, AIAA Aviation 2016, Washington, D.C. <http://dx.doi.org/10.2514/6.2016-4033>
- [77] D.Lapeine, F.Very, D.Laux J.Y.Ferrandis, **B.Charlot**; F.Pascal, P.Combette; A.Giani “Fabrication, characterization and test of acoustic sensors for detection of pollutants in aquatic environments,” in 2015 Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS (DTIP), 2015.
- [78] **B.Charlot**, R.Teissier, and E.Schwob, “Micro and nanostructured substrates for DNA fibers combing by forced dewetting”, DTIP, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS (DTIP), Montpellier - France, (2015).
- [79] L.Paris, **B.Charlot**, M.Dumas, J.Valmier and F.Bardin, “Stimulation of dorsal root ganglion neurons by infra-red laser millisecond pulses”, IEEE EMBS Neural engineering conference, Montpellier, France, (2015)
- [80] **B.Charlot**, M.Lechelon, F.Bardin, R.Teissier, L.Paris, J.Valmier, “Axonal growth guidance by surface nano-topology for the regeneration of sensori motor neurons”, IEEE EMBS Neural engineering conf rence, Montpellier, France, (2015)
- [81] A.Vena, B.Sorli, **B.Charlot** and S.Naudi, “An RFID-based Implant for Identification and Pressure Sensing of Orthopedic Prosthesis”, 1st URSI Atlantic Radio Science Conference (URSI AT-RASC) May 18 - 22, 2015
- [82] **B.Charlot**, N.Sanchez, P.Roux, S.Teixeira, “Double emulsion generation and separation by microfluidic consecutive flow focusing”, DTIP, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS (DTIP), 2-4 April 2014, Cannes, France
- [83] **B.Charlot**, F.Bardin, N.Sanchez, P.Roux, S.Teixeira and E.Schwob, “Mechanisms of DNA combing through receding meniscus assembly on microstructured substrate” Proc. Conference on Miniaturized Systems for Chemistry and Life Sciences, MicroTAS 2013.

- [84] M.Balde, F.Bibi, **B.Charlot**, P.Combette, B.Sorli, "Growth and characterization of anodized aluminum oxide thin film on paper-based substrate", DTIP, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS (DTIP), 16-18 April 2013, Barcelona, Spain.
- [85] **B.Charlot**, D.Coudouel, P.Combette, A.Giani, "Pyroelectric PZT sensors screen printed on glass", DTIP, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS (DTIP), 16-18 April 2013, Barcelona, Spain.
- [86] M.Balde, F.Jacquemoud-Collet, **B.Charlot**, P.Combette, B.Sorli, "Microelectronic technology on paper substrate", Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS (DTIP), 25-27 April 2012
- [87] **B.Charlot**, G.Sassine, A.Garraud, A.Giani, P.Combette, "Micropatterning and casting PEDOT-PSS/DMSO layers", Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS (DTIP), 2012, 25-27 April 2012
- [88] D.Coudouel, A.Garraud, S.Gauthier, A.Giani, B.Sorli, **B.Charlot**, P.Combette, "Convective thermal accelerometers using screen printed pyroelectric thick-films", Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS (DTIP), 2012, pp.177-18.
- [89] A.Garraud, P.Combette, J.M.Gosalbes, **B.Charlot**, A.Giani, "First high-g measurement by thermal accelerometers", 16th International Solid-State Sensors, Actuators and Microsystems Conference (TRANSDUCERS), 2011.
- [90] P.Combette, A.Garraud, B.Charlot, A.Giani, "A new thermal accelerometer based on pyroelectric thin films", 14th International Symposium on Electrets (ISE), 28-31 Aug. 2011
- [91] A.Garraud, P.Combette, **B.Charlot**, P.Loisel, A.Giani, "A closed-loop micromachined accelerometer based on thermal convection", Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS (DTIP), 2011.
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6. Brevets

Titre : A MEMS CALORIMETRIC SHEAR-STRESS SENSOR AND A METHOD OF FABRICATION THEREOF

Date de dépôt du brevet provisoire: 18 mai 2016

Numéro d'application : 62/338,022

Inventeurs: Julien Weiss, Alain Giani, Philippe Combette et Benoît Charlot.

Titre : Puce microfluidique pour attirer et détruire un élément biologique spécifique

Date de dépôt du brevet provisoire: 15 mars 2019

Numéro d'application FR1902686

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