

David Fernández Rivas
Associate Professor
Mesoscale Chemical Systems
TechMed Centre
MESA+ Institute



Employment

Associate Professor

Mesoscale Chemical Systems
University of Twente
1 Jan 2022 → present

Associate Professor

TechMed Centre
University of Twente
1 Jul 2021 → present

Associate Professor

MESA+ Institute
University of Twente
1 Jan 2018 → present

Invited distinguished professor

Ecole Polytechnique Federale de Lausanne (EPFL)
Neuchatel, Switzerland
1 May 2022 → 31 May 2022

Research affiliate

Massachusetts Institute of Technology
Cambridge, United States
1 Aug 2017 → present

Visiting scientist

Massachusetts Institute of Technology
Cambridge, United States
1 May 2017 → 1 Aug 2017

Research outputs

Ultrasound and sonochemistry enhance education outcomes: From fundamentals and applied research to entrepreneurial potential

Fernandez Rivas, D., Cintas, P., Glassey, J. & Boffito, D. C., Feb 2024, In: Ultrasonics sonochemistry. 103, 106795.

Laser beam properties and microfluidic confinement control thermocavitation

Schoppink, J. J., Alvarez-Chavez, J. A. & Fernandez Rivas, D., 4 Jan 2024, In: Applied physics letters. 124, 1, 014102.

Zero-Gap Porous Silicon Membrane Electrodes for Alkaline Electrolysis

Raman, A., Werf, S. V. D., Gardeniers, H., Rivas, D. F. & Arce, A. S., 22 Dec 2023, In: Meeting Abstracts of the Electrochemical Society. MA2023-02

Investigating mass transfer around spatially-decoupled electrolytic bubbles

Raman, A., Porto, C. C. D. S., Gardeniers, H., Soares, C., Rivas, D. F. & Padoin, N., 1 Dec 2023, In: Chemical Engineering Journal. 477, 147012.

Gas density influences the transition from capillary collapse to surface seal in microfluidic jet impacts on deep pools

Kroeze, T. B., Rivas, D. F. & Quetzeri-Santiago, M. A., 27 Oct 2023.

Laser beam properties and microfluidic confinement control thermocavitation

Schoppink, J. J., Alvarez-Chavez, J. A. & Rivas, D. F., 13 Oct 2023.

Material characterization method

David, F. R. & Miguel, A. Q. S., 18 Aug 2023, IPC No. A61M 5/ 30 A I, Patent No. NL2030901B, Priority date 11 Feb 2022 , Priority No. NL20222030901

Cavitation induced by pulsed and continuous-wave fiber lasers in confinement

Schoppink, J. J., Krizek, J., Moser, C. & Fernandez Rivas, D., 1 Aug 2023, In: Experimental thermal and fluid science. 146 , 110926.

Investigating Mass Transfer Around Spatially-Decoupled Electrolytic Bubbles

Raman, A., Porto, C. C. D. S., Gardeniers, H., Soares, C., Rivas, D. F. & Padoin, N., 3 Jul 2023, ChemRxiv, 33 p.

Bubble collapse near porous plates

Andrews, E. D., Rivas, D. F. & Peters, I. R., 10 May 2023, In: Journal of fluid mechanics. 962, A11.

Microfluidic jet impact: spreading, splashing, soft substrate deformation and injection

van der Ven, D. L., Morrone, D., Quetzeri Santiago, M. A. & Fernández Rivas, D., 15 Apr 2023, In: Journal of colloid and interface science. 636, p. 549-558 10 p.

Cavitation-induced microjets tuned by channels with alternating wettability patterns

Schoppink, J., Mohan, K., Quetzeri-Santiago, M., McKinley, G. H., Rivas, D. F. & Dickerson, A. K., 21 Mar 2023, (E-pub ahead of print/First online) In: Physics of fluids. 35, 032017.

Cavitation-induced microjets tuned by channels with alternating wettability patterns

Schoppink, J. J., Mohan, K., Quetzeri-Santiago, M. A., McKinley, G., Rivas, D. F. & Dickerson, A. K., 24 Jan 2023, ArXiv.org.

Cavity dynamics after the injection of a microfluidic jet onto capillary bridges

Quetzeri-Santiago, M. A. & Rivas, D. F., 14 Jan 2023, In: Soft matter. 19, 2, p. 245-257 13 p.

Cavitation induced by pulsed and continuous-wave fiber lasers in confinement

Schoppink, J. J., Krizek, J., Moser, C. & Rivas, D. F., 21 Nov 2022, ArXiv.org.

Bubble collapse near porous plates

Andrews, E. D., Rivas, D. F. & Peters, I. R., 7 Oct 2022, ArXiv.org.

Potential response of single successive constant-current-driven electrolytic hydrogen bubbles spatially separated from the electrode

Raman, A., Peñas, P., van der Meer, D., Lohse, D., Gardeniers, H. & Fernández Rivas, D., 1 Sept 2022, In: Electrochimica acta. 425, 140691.

Empathic Entrepreneurial Engineering: The Missing Ingredient

Fernandez Rivas, D., 22 Aug 2022, Walter de Gruyter.

Microfluidic jet impact: spreading, splashing, soft substrate deformation and injection

Ven, D. L. V. D., Morrone, D., Quetzeri-Santiago, M. A. & Rivas, D. F., 25 Jul 2022.

Cavity dynamics after the injection of a microfluidic jet in capillary bridges

Quetzeri-Santiago, M. A. & Fernandez Rivas, D., 6 Jul 2022, ArXiv.org.

Empathy, Persuasiveness and Knowledge promote innovative engineering and entrepreneurial skills

Fernandez Rivas, D. & Husein, S., Jul 2022, In: Education for Chemical Engineers. 40, p. 45-55 11 p.

On an intensification factor for green chemistry and engineering: The value of an operationally simple decision-making tool in process assessment

Fernandez Rivas, D. & Cintas, P., Jun 2022, In: Sustainable Chemistry and Pharmacy. 27, 100651.

Jet injectors: Perspectives for small volume delivery with lasers

Schoppink, J. & Fernandez Rivas, D., Mar 2022, In: Advanced drug delivery reviews. 182, 114109.

Miniature robust high-bandwidth force sensor with mechanically amplified piezoresistive readout

Alveringh, D., van der Ven, D. L., Veltkamp, H-W., Batenburg, K. M., Sanders, R. G. P., Fernandez Rivas, D. & Wiegerink, R. J., 11 Feb 2022, *2022 IEEE 35th International Conference on Micro Electro Mechanical Systems Conference (MEMS)*. Tokyo, Japan: IEEE, p. 684-687 4 p.

Open Science – For Whom?

Dominik, M., Nzweundji, J. G., Ahmed, N., Carnicelli, S., Jalaluddin, N. S. M., Rivas, D. F., Narita, V., Enany, S. & Rojas, C. R., 10 Jan 2022, In: Data Science Journal. 21, 1, p. 1-8

Correction: Mitigating losses: how scientific organisations can help address the impact of the COVID-19 pandemic on early-career researchers

Lopez-Verges, S., Urbani, B., Fernandez Rivas, D., Kaur-Ghumaan, S., Coussens, A. K., Moronta-Barrios, F., Bhattarai, S., Niamir, L., Siciliano, V., Molnar, A., Weltman, A., Dhimal, M., Arya, S. S., Cloete, K. J., Awan, A. T., Kohler, S., Sharma, C. S., Rios Rojas, C., Shimpuku, Y., Ganle, J., & 4 othersMatin, M. M., Nzweundji, J. G., Badre, A. & Carmona-Mora, P., 2 Dec 2021, In: Humanities and Social Sciences Communications. 8, 1, 313.

Mitigating losses: how scientific organisations can help address the impact of the COVID-19 pandemic on early-career researchers

Lopez-Verges, S. L., Urbani, B., Fernandez Rivas, D. & Carmona-Mora, P., Dec 2021, In: Humanities and Social Sciences Communications. 8, 284.

Assessment of cytotoxicity and sensitization potential of intradermally injected tattoo inks in reconstructed human skin

Karregat, J., Rustemeyer, T., van der Bent, S., Spiekstra, S., Thon, M., Fernandez Rivas, D. & Gibbs, S., Sept 2021, In: Contact Dermatitis. 85, 3, p. 324-339 16 p.

Impact of a microfluidic jet on a pendant droplet

Quetzeri-Santiago, M. A., Hunter, I. W., van der Meer, D. & Fernandez Rivas, D., 28 Aug 2021, In: Soft matter. 17, 32, p. 7466-7475 10 p.

Call to action: Supporting Latin American early career researchers on the quest for sustainable development in the region

Lopez-Verges, S. L., Valiente-Echeverría, F., Godoy-Faúndez, A., Fernandez Rivas, D., Urbani, B., Berger, J. J. & Carmona-Mora, P., 14 May 2021, In: Frontiers in research metrics and analytics. 6, 657120.

Challenges and opportunities for small volumes delivery into the skin

Mercuri, M. & Fernandez Rivas, D., 1 Jan 2021, In: Biomicrofluidics. 15, 1, 011301.

Cavitation intensifying bags improve ultrasonic advanced oxidation with Pd/Al₂O₃ catalyst

Pappaterra, M., Xu, P., van der Meer, W., Faria, J. A. & Rivas, D. F., Jan 2021, In: Ultrasonics sonochemistry. 70, 105324.

Process intensification connects scales and disciplines towards sustainability

Boffito, D. C. & Fernandez Rivas, D., Dec 2020, In: Canadian journal of chemical engineering. 98, 12, p. 2489-2506 18 p.

Cavity collapse near slot geometries

Andrews, E. D., Rivas, D. F. & Peters, I. R., 25 Oct 2020, In: Journal of fluid mechanics. 901, A29.

Jet injection system

Fernandez Rivas, D. & Oyarte Galvez, L. A., 11 Sept 2020, IPC No. A61M 5/30 A I, Patent No. NL2025071, Priority date 8 Mar 2019, Priority No. EP20190161647

Process Intensification education contributes to sustainable development goals: Part 2

Rivas, D. F., Boffito, D. C., Faria-Albanese, J., Glassey, J., Cantin, J., Afraz, N., Akse, H., Boodhoo, K. V. K., Bos, R., Chiang, Y. W., Commenge, J.-M., Dubois, J.-L., Galli, F., Harmsen, J., Kalra, S., Keil, F., Morales-Menendez, R., Navarro-Brull, F. J., Noël, T., Ogden, K., & 9 others Patience, G. S., Reay, D., Santos, R. M., Smith-Schoettker, A., Stankiewicz, A. I., den Berg, H. V., van Gerven, T., van Gestel, J. & Weber, R. S., 1 Jul 2020, In: Education for Chemical Engineers. 32, p. 15-24 10 p.

Process intensification education contributes to sustainable development goals: Part 1

Fernández Rivas, D., Boffito, D. C., Faria-Albanese, J., Glassey, J., Afraz, N., Akse, H., Boodhoo, K. V. K., Bos, R., Cantin, J. & van den Berg, H., Jul 2020, In: Education for Chemical Engineers. 32, p. 1-14 14 p.

Small bubbles and bubble bags: a scientific knowledge valorisation

Fernandez Rivas, D., 24 Jun 2020, In: The Cuban Scientist. 1, 1, p. 23-24

Influence of Bubbles on the Energy Conversion Efficiency of Electrochemical Reactors

Angulo, A., van der Linde, P., Gardeniers, H., Modestino, M. A. & Fernandez Rivas, D., 18 Mar 2020, In: Joule. 4, 3, p. 555-579 25 p.

Microfluidics control the ballistic energy of thermocavitation liquid jets for needle-free injections

Oyarte Gálvez, L., Fraters, A. B., Offerhaus, H. L., Versluis, M., Hunter, I. W. & Fernández Rivas, D., 14 Mar 2020, In: Journal of Applied Physics. 127, 10, 104901.

Intensifying Learning Processes

Fernandez Rivas, D. & Boffito, D. C., 2020, IChemE Educational Special Interest Group.

Jet injection system

Fernandez Rivas, D. & Oyarte Galvez, L. A., 2020, IPC No. A61M 5/30 2006.01, Patent No. WO/2020/182665, 6 Mar 2020, Priority date 8 Mar 2019

Decoupling Gas Evolution from Water-Splitting Electrodes

Peñas, P., van der Linde, P., Visselaar, W., van der Meer, D., Lohse, D., Huskens, J., Gardeniers, H., Modestino, M. A. & Fernandez Rivas, D., 23 Oct 2019, In: Journal of the Electrochemical Society. 166, 15, p. H769-H776

Delivery Strategies for Skin: Comparison of Nanoliter Jets, Needles and Topical Solutions

Cu, K., Bansal, R., Mitragotri, S. & Fernandez Rivas, D., 15 Oct 2019, In: Annals of biomedical engineering. 48, p. 2028-2039

A Comparison of Drug Delivery into Skin Using Topical Solutions, Needle Injections and Jet Injections

Cu, K., Bansal, R., Mitragotri, S. & Rivas, D. F., 8 Jul 2019, bioRxiv.

In-phase synchronization between two auto-oscillating bubbles

Nguyen, D. M., Sanathanan, M. S., Miao, J., Rivas, D. F. & Ohl, C-D., 22 Apr 2019, In: Physical review fluids. 4, 4, 14 p., 043601.

High speed imaging of solid needle and liquid micro-jet injections

Oyarte Galvez, L. A., Fernandez Rivas, D. & Brio Perez, M., 14 Apr 2019, In: Journal of Applied Physics. 125, 14, 144504.

Acoustophoretic focusing effects on particle synthesis and clogging in microreactors

Dong, Z., Fernandez Rivas, D. & Kuhn, S., 21 Jan 2019, In: Lab on a chip. 19, 2, p. 316-327 12 p.

Controllable production of Janus ligaments by AC fields in a flow-focusing junction

De Castro-Hernández, E., García-Sánchez, P., Leon Rodriguez, M., Fernandez Rivas, D. & Ramos, A., 2 Jan 2019, In: Microfluidics and nanofluidics. 23, 1, p. 10 5 p., 10.

Gas bubble evolution on microstructured silicon substrates

van der Linde, P., Peñas-López, P., Moreno Soto, A., van der Meer, D., Lohse, D., Gardeniers, H. & Fernandez Rivas, D., 19 Oct 2018, In: Energy & environmental science. 11, 12, p. 3452-3462 11 p.

Novel swirl flow-focusing microfluidic device for the production of monodisperse microbubbles

Arcos-Turmo, I., Herrada, M. Á., López-Herrera, J. M., Fernandez Rivas, D., Gañán-Calvo, A. M. & Castro-Hernández, E., 20 Jul 2018, In: Microfluidics and nanofluidics. 22, 7 p., 79.

Pathways to Electrochemical Solar-Hydrogen Technologies

Ardo, S., Fernandez Rivas, D., Modestino, M. A., Schulze Greiving, V., Abdi, F. F., Alarcon Llado, E., Artero, V., Ayers, K., Battaglia, C., Becker, J-P., Bederak, D., Berger, A., Buda, F., Chinello, E., Dam, B., Di Palma, V., Edvinsson, T., Fujii, K., Gardeniers, H., Geerlings, H., & 25 others Hashemi, S. M. H., Haussener, S., Houle, F., Huskens, J., James, B. D., Konrad, K. E., Kudo, A., Kunturu, P. P., Lohse, D., Mei, B. T., Miller, E. L., Moore, G. F., Muller, J., Orchard, K. L., Rosser, T. E., Saadi, F. H., Schüttauf, J-W., Seger, B., Sheehan, S. W., Smith, W. A., Spurgeon, J., Tang, M. H., van de Krol, R., Vesborg, P. C. K. & Westerik, P. J., 19 Jun 2018, In: Energy & environmental science. 11, 10, p. 2768-2783

Cleaning of used rotary nickel-titanium files in an ultrasonic bath by locally intensified acoustic cavitation

Bryson, L. M., Fernandez Rivas, D. & Boutsoukis, C., Apr 2018, In: International endodontic journal. 51, 4, p. 457-468 12 p.

Bubble nucleation from micro-crevices in a shear flow: Experimental determination of nucleation rates and surface nuclei growth

Groß, T. F., Bauer, J., Ludwig, G., Fernandez Rivas, D. & Pelz, P. F., 1 Jan 2018, In: Experiments in fluids. 59, 1, 10 p., 12.

Evaluation method for process intensification alternatives

Rivas, D. F., Castro-Hernández, E., Villanueva Perales, A. L. & van der Meer, W., Jan 2018, In: Chemical engineering and processing : process intensification. 123, p. 221-232 12 p.

Is reproducibility inside the bag? Special issue fundamentals and applications of sonochemistry ESS-15

Gomes, F., Thakkar, H., Lähde, A., Verhaagen, B., Pandit, A. B. & Fernandez Rivas, D., Jan 2018, In: Ultrasonics sonochemistry. 40, Part B, p. 163-174 12 p.

Electrolysis-driven and pressure-controlled diffusive growth of successive bubbles on micro-structured surfaces

Linde, P. V. D., Soto, Á. M., Peñas-López, P., Rodríguez-Rodríguez, J., Lohse, D., Gardeniers, H., Meer, D. V. D. & Rivas, D. F., 14 Nov 2017, In: Langmuir. 33, 45, p. 12873-12886 14 p.

Streaming flow by oscillating bubbles: quantitative diagnostics via particle tracking velocimetry

Bolaños-Jiménez, R., Rossi, M., Fernandez Rivas, D., Kähler, C. J. & Marin, A., Jun 2017, In: Journal of fluid mechanics. 820, p. 529-548 20 p.

Emulsification in novel ultrasonic cavitation intensifying bag reactors

van Zwieten, R., Verhaagen, B., Schroen, K. & Fernandez Rivas, D., May 2017, In: Ultrasonics sonochemistry. 36, p. 446-453

Droplet group production in an AC electro-flow-focusing microdevice

Castro-Hernández, E., García-Sánchez, P., Velencoso-Gómez, A., Silas-Jurado, A., Fernandez Rivas, D. & Ramos, A., 2017, In: Microfluidics and nanofluidics. 21, 5 p., 158.

Toward jet injection by continuous-wave laser cavitation

Berrospe-Rodriguez, C., Visser, C. W., Schlautmann, S., Fernandez Rivas, D. & Ramos-Garcia, R., 2017, In: Journal of biomedical optics. 22, 10, 9 p., 105003.

Synergy of Microfluidics and Ultrasound: Process Intensification Challenges and Opportunities

Fernandez Rivas, D. & Kuhn, S., 21 Sept 2016, In: Topics in current chemistry. 374, 70, p. - 30 p.

The potential for microfluidics in electrochemical energy systems

Modestino, M. A., Fernandez Rivas, D., Hashemi, S. M. H., Gardeniers, J. G. E. & Psaltis, D., 14 Sept 2016, In: Energy & environmental science. 9, p. 3381-3391

Solar-hydrogen generation and solar concentration (Conference Presentation)

Sulima, O. V. (ed.), Chinello, E., Conibeer, G. (ed.), Modestino, M. A., Schüttauf, J-W., Lambelet, D., Delfino, A., Domine, D., Faes, A., Despeisse, M., Bailat, J., Psaltis, D., Fernandez Rivas, D., Ballif, C. & Moser, C., 28 Aug 2016, p. -.

Measuring cavitation and its cleaning effect

Verhaagen, B. & Fernandez Rivas, D., Mar 2016, In: Ultrasonics sonochemistry. 29, p. 619-628 10 p.

Preface to the Special Issue: Cleaning with bubbles

Fernandez Rivas, D. & Verhaagen, B., Mar 2016, In: Ultrasonics sonochemistry. 29, p. 517-518

Efficient cleaning of a microfluidic chip

Fernandez Rivas, D., 8 Feb 2016

Study of the geometry in a 3D flow-focusing device

Castro-Hernandez, E., Kok, M., Versluis, M. & Fernandez Rivas, D., 2 Feb 2016, In: Microfluidics and nanofluidics. 20, 40.

Scaled-up sonochemical microreactor with increased efficiency and reproducibility

Verhaagen, B., Liu, Y., Galdames Perez, A., Castro-Hernández, E. & Fernandez Rivas, D., Feb 2016, In: ChemistrySelect. 1, 2, p. 136-139

Ultrasonic cleaning of 3D printed objects and Cleaning Challenge Devices

Verhaagen, B., Zanderink, T. & Fernandez Rivas, D., Feb 2016, In: Applied acoustics. 103, part B, p. 172-181

Heat-flux enhancement by vapour-bubble nucleation in Rayleigh-Bénard turbulence

Narezo Guzman, D., Xie, Y., Chen, S., Fernandez Rivas, D., Sun, C., Lohse, D. & Ahlers, G., 25 Jan 2016, In: Journal of fluid mechanics. 787, p. 331-365 36 p.

Continuous-wave laser generated jets for needle free applications

Berrospe-Rodriguez, C., Visser, C. W., Schlautmann, S., Ramos-Garcia, R. & Fernandez Rivas, D., Jan 2016, In: Biomicrofluidics. 10, 1, p. - 9 p., 014104.

Plasma-liquid interactions: a review and roadmap

Bruggeman, P. J., Kushner, M. J., Locke, B. R., Gardeniers, J. G. E., Graham, W. G., Graves, D. B., Hofman-Caris, R. C. H. M., Mario, D., Reid, J. P., Ceriani, E., Fernandez Rivas, D., Foster, J. E., Garrick, S. C., Gorbanev, Y., Hamaguchi, S.,

Iza, F., Jablonowski, H., Klimova, E., Kolb, J., Kroma, F., & 21 others Lukes, P., Machala, Z., Marinov, I., Mariotti, D., Mededovic Thagard, S., Minakata, D., Neyts, E. C., Pawlat, J., Petrovic, Z. L. J., Pflieger, R., Reuter, S., Schram, D. C., Schroter, S., Shiraiwa, M., Tarabova, B., Tsai, P. A., Verlet, J. R. R., von Woedtke, T., Wilson, K. R., Yasui, K. & Zvereva, G., 2016, In: Plasma sources science and technology. 25, 5, p. 053002- 053002.

Micropits for ultrasonic treatment

Verhaagen, B., Fernandez Rivas, D., Gardeniers, J. G. E. & Versluis, M., 1 Oct 2015, (Submitted) Patent No. WO/2015/144918, Priority date 1 Oct 2015

Enhancing acoustic cavitation using artificial crevice bubbles

Zijlstra, A. G., Fernandez Rivas, D., Gardeniers, J. G. E., Versluis, M. & Lohse, D., Feb 2015, In: Ultrasonics. 56, p. 512-523 12 p.

A novel ultrasonic cavitation enhancer

Fernandez Rivas, D., Verhaagen, B., Galdamez Perez, A., Castro-Hernández, E., van Zwieten, R. & Schroen, K., 2015, In: Journal of physics: Conference series. 656, 1, 4 p., 012112.

Complementary technologies required for 21st century additive manufacturing product insertion.

Fernandez Rivas, D., Verhaagen, B. & Walsh, S., 2015, CMM international, 8, 6, p. 30-33.

Cavitation Measurement during Sonic and Ultrasonic Activated Irrigation

Macedo, R. G., Verhaagen, B., Fernandez Rivas, D., Versluis, M., Wesselink, P. R. & van der Sluis, L. W. M., 30 Dec 2014, In: Journal of endodontics. 40, 4, p. 580-583

Sonochemical and high-speed optical characterization of cavitation generated by an ultrasonically oscillating dental file in root canal models

Macedo, R. G., Verhaagen, B., Fernandez Rivas, D., Gardeniers, J. G. E., van der Sluis, L. W. M., Wesselink, P. R. & Versluis, M., Jan 2014, In: Ultrasonics sonochemistry. 21, 1, p. 324-335 12 p.

Ultrasound artificially nucleated bubbles and their sonochemical radical production

Fernandez Rivas, D., Stricker, L., Zijlstra, A. G., Gardeniers, J. G. E., Lohse, D. & Prosperetti, A., Jan 2013, In: Ultrasonics sonochemistry. 20, 1, p. 510-524 15 p.

Erosion evolution in mono-crystalline silicon surfaces caused by acoustic cavitation bubbles

Fernandez Rivas, D., Betjes, J., Verhaagen, B., Bouwhuis, W., Bor, T. C., Lohse, D. & Gardeniers, J. G. E., 2013, In: Journal of Applied Physics. 113, 6, p. 1-13 13 p., 064902.

Interacting bubble clouds and their sonochemical production

Stricker, L., Dollet, B., Fernandez Rivas, D. & Lohse, D., 2013, In: The Journal of the Acoustical Society of America. 134, 3, p. 1854-1862 1 p.

Sonoluminescence and sonochemiluminescence from a microreactor

Fernandez Rivas, D., Ashokkumar, M., Leong, T., Yasui, K., Tuziuti, T., Kentish, S., Lohse, D. & Gardeniers, H. J. G. E., Nov 2012, In: Ultrasonics sonochemistry. 19, 6, p. 1252-1259 8 p.

Hydrodynamic cavitation in micro channels with channel sizes of 100 and 750 micrometers

Rooze, J., André, M., van der Gulik, G-J. S., Fernández-Rivas, D., Gardeniers, J. G. E., Rebrov, E. V., Schouten, J. C. & Keurentjes, J. T. F., 26 Oct 2012, In: Microfluidics and nanofluidics. 12, 1-4, p. 499-508 10 p.

Taming acoustic cavitation

Fernandez Rivas, D., 26 Oct 2012, Enschede: University of Twente. 212 p.

Localized removal of layers of metal, polymer, or biomaterial by ultrasound cavitation bubbles

Fernandez Rivas, D., Verhaagen, B., Seddon, J. R. T., Zijlstra, A. G., Jiang, L-M., van der Sluis, L. W. M., Versluis, M., Lohse, D. & Gardeniers, H. J. G. E., 21 Aug 2012, In: Biomicrofluidics. 6, 3, 20 p., 034114.

Merging microfluidics and sonochemistry: towards greener and more efficient micro-sono-reactors

Fernandez Rivas, D., Cintas, P. & Gardeniers, J. G. E., 2012, In: Chemical communications. 48, 89, p. 10935-10947 13 p.

Microfluidos: nuevas fronteras

Fernandez Rivas, D., 2011, In: Revista Cubana de fisica. 28, 1, p. 60-67

Sonochemical microreactor with microbubbles created on micromachined surfaces

Fernandez Rivas, D., Zijlstra, A. G., Prosperetti, A., Lohse, D. & Gardeniers, J. G. E., 1 Dec 2010, *14th International Conference on Miniaturized Systems for Chemistry and Life Sciences 2010, MicroTAS 2010*. Verpoorte, S., Andersson-Svahn, H., Emnéus, J. & Pamme, N. (eds.). The Chemical and Biological Microsystems Society, Vol. 3. p. 2123-2125 3 p. (International Conference on Miniaturized Systems for Chemistry and Life Sciences : [proceedings]; vol. 2010).

Efficient Sonochemistry through Microbubbles Generated with Micromachined Surfaces

Fernandez Rivas, D., Prosperetti, A., Zijlstra, A. G., Lohse, D. & Gardeniers, J. G. E., 2010, In: Angewandte Chemie (international edition). 49, 50, p. 9699-9701 3 p.

On the resilience of PDMS microchannels after violent optical breakdown microbubble cavitation

Fernandez Rivas, D. & Gardeniers, J. G. E., Jun 2008, *Proceedings of the Sixth International ASME Conference on Nanochannels, Microchannels and Minichannels*. 4 p. ICNMM2008-62385

Microfluidos: cuanto hay de nuevo?

Fernandez Rivas, D., 2008, In: Revista Cubana de fisica. 25, 2B, p. 142-149

Microfluidos: ¿cuánto hay de nuevo?

Fernandez Rivas, D., 2008, In: Revista Cubana de fisica. 25, 2B, p. 142-149

On the hydrodynamics of liquid-liquid slug flow capillary microreactors

Kashid, M. N., Fernandez Rivas, D., Agar, D. W. & Turek, S., 2008, In: Asia-Pacific journal of chemical engineering. 3, 2, p. 151-160 10 p.

Slug flow capillary microreactor hydrodynamic study

Fernandez Rivas, D., Kashid, M. N., Agar, D. W. & Turek, S., 2007, In: African Review of Physics. 1, Special Issue, Part I, p. 9-11 3 p.

Early Turbulence Transition by Polymer Addition

Fernandez Rivas, D., 20 Sept 2006

La dinámica de fluidos computacional, su aplicación al estudio de las características de un intercambiador de tubos térmicos

Fernandez Rivas, D. & Piedra Diaz, M., 2005, In: Ingeniería mecánica. 8, 3, p. 1-10

Tracer experimental techniques for CFD model verification and validation in sugar crystallizer

Fernández Rivas, D. & Amor Coarasa, A., Nov 2004, *Integration of tracing with computational fluid dynamics for industrial process investigation: Final report of a co-ordinated research project 2001-2003*. International Atomic Energy Agency (IAEA), p. 67-83

Tracer experimental techniques for CFD model verification and validation in sugar crystallizer

Griffith, J., Borroto, J., Dominguez, J., Derivet, M., Cuesta, J., Flores, P., Fernandez Rivas, D., Amor, A. & Franklin, B., 2004, *Integration of tracing with computational fluid dynamics for industrial process investigation: final report of a co-ordinated research project*. IAEA, p. 67-83 228 p. (IAEA-TECDOC; vol. 1412).

Activities

Andrew Dickerson

David Fernandez Rivas (Host)

Jan 2022 → ...

Global Young Academy (External organisation)

David Fernandez Rivas (Chair)

2020 → 2025

Mesoscale Chemical Systems (Organisational unit)

David Fernandez Rivas (Chair)

2020

Cost Action CA18224 - Green Chemical Engineering Network towards upscaling sustainable processes (External organisation)

David Fernandez Rivas (Chair)

Nov 2019 → Nov 2023

Process Intensification Network NL (PIN NL) (External organisation)

David Fernandez Rivas (Chair)

2017

Localized removal of layers of metal, polymer of biomaterial by ultrasound cavitation microbubbles

B. Verhaagen (Speaker), David Fernandez Rivas (Speaker), Johannes G.E. Gardeniers (Speaker), Michel Versluis (Speaker) & Detlef Lohse (Speaker)

1 Dec 2012

High-speed fluorescence imaging

E.C. Gelderblom (Speaker), F. Wolbers (Speaker), Y. Luan (Speaker), K. Kooiman (Speaker), I. Lentacker (Speaker), H. De Witte (Speaker), B. Geers (Speaker), B. Verhaagen (Speaker), Pascal Sleutel (Speaker), A.G. Zijlstra (Speaker), David Fernandez Rivas (Speaker), N. de Jong (Speaker) & Michel Versluis (Speaker)

12 Jan 2012

High-speed fluorescence imaging

E.C. Gelderblom (Speaker), F. Wolbers (Speaker), Y. Luan (Speaker), K. Kooiman (Speaker), I. Lentacker (Speaker), H. De Witte (Speaker), B. Geers (Speaker), B. Verhaagen (Speaker), Pascal Sleutel (Speaker), A.G. Zijlstra (Speaker), David Fernandez Rivas (Speaker), N. de Jong (Speaker) & Michel Versluis (Speaker)

12 Jan 2012

Press/Media

'Virtually painless' needle-free injections developed in Netherlands

David Fernandez Rivas, Lea Milovich & Jan Jelle Schoppink

13/10/21

1 Media contribution

A Dutch Scientist Has Invented Needle-Free Injections

David Fernandez Rivas

19/10/21

1 item of Media coverage

Are you afraid of an injection?

David Fernandez Rivas

19/10/21

1 Media contribution

BNR Radio Interview over Needle-free technology

David Fernandez Rivas

8/05/19

1 Media contribution

Bang voor een prik? Deze onderzoeker wil medicijnen met een laser inspuiten

David Fernandez Rivas

6/03/20

1 Media contribution

Best tech idea 2017

David Fernandez Rivas

16/11/17

1 Media contribution

Bubble guns and the Japanese subway

David Fernández Rivas

21/10/22

1 Media contribution

Cover of prestigious Energy & Environmental Science Journal

David Fernandez Rivas

17/10/18

1 item of Media coverage

David Fernandez Rivas en Cathy van Beek over injecteren zonder naalden

David Fernandez Rivas

23/03/21

1 Media contribution

De ongekende kracht van belletjes

David Fernandez Rivas

15/03/17

1 Media contribution

Digitale uitreiking zevende Prins Friso Ingenieursprijs

David Fernandez Rivas

17/03/21

1 Media contribution

Doodsbang voor prikken? Het kan straks zonder naald

David Fernandez Rivas

10/03/20

1 Media contribution

Ecco il tatuaggio senza aghi, indolore e intelligente

David Fernandez Rivas

11/06/19

1 item of Media coverage

Een op de vijf Nederlanders is bang voor naalden

David Fernandez Rivas

18/08/21

1 item of Media coverage

Empathy: Enabling students to be entrepreneurs

David Fernandez Rivas

31/03/22

1 Media contribution

Eén spuit en het licht gaat uit

David Fernandez Rivas

9/01/21

1 item of Media coverage

High-speed camera captures a water jet's splashy impact as it pierces a droplet

David Fernandez Rivas, Miguel Angel Quetzeri Santiago & Ian Hunter

18/08/21

1 item of Media coverage

I want to remain relevant

David Fernandez Rivas

22/10/21

1 item of Media coverage

Impact of a microfluidic jet on a pendant droplet

David Fernández Rivas , Miguel Angel Quetzeri Santiago, Devaraj van der Meer & Ian W. Hunter

18/11/22

2 Media contributions

Ingeniero cubano es candidato al premio Príncipe Friso de Ingeniería

David Fernandez Rivas

14/03/21

1 item of Media coverage

Ingenieur van het jaar David Fernandez Rivas: 'Erkenning van de samenleving'

David Fernandez Rivas

18/03/21

1 item of Media coverage

Injecting without fear

David Fernández Rivas & Diana Laura van der Ven

23/11/22

1 Media contribution

Injecting without needles

David Fernandez Rivas

5/05/21

1 Media contribution

Injecting without needles on Dutch National TV

David Fernandez Rivas & Jan Jelle Schoppink

5/05/21

1 Media contribution

Interview Ahora con Oscar Haza

David Fernandez Rivas

19/03/21

1 Media contribution

Interview to BuBble Gun team

David Fernandez Rivas, Diana Laura van der Ven & Jan Jelle Schoppink

10/03/20

1 item of Media coverage

Inyecciones sin agujas: el proyecto candidato a premio de un ingeniero cubano

David Fernandez Rivas

9/03/21

1 Media contribution

Injectar sin agujas: la solución de un cubano y su equipo en los Países Bajos

David Fernandez Rivas

3/03/21

1 item of Media coverage

LJUSGLIMTAR: Se lasersprutan som ska bota spruträdsla

David Fernandez Rivas

29/10/21

1 item of Media coverage

Laser powers needle-free microjet injection

David Fernandez Rivas

23/04/19

1 Media contribution

Lecture in Universiteit van Nederland

David Fernandez Rivas

8/02/21

1 Media contribution

Lichtgevende tatoeage als waarschuwing

David Fernandez Rivas

4/03/21

1 Media contribution

Microjets and Needle-Free Injection

David Fernandez Rivas, Miguel Angel Quetzeri Santiago & Devaraj van der Meer

8/09/21

1 item of Media coverage

Naaldloos injecteren: het kan

David Fernandez Rivas & Lea Milovich

6/05/21

1 Media contribution

Needle-free injections could become a reality, thanks to lasers and the 'bubble gun'

David Fernandez Rivas, Lea Milovich & Jan Jelle Schoppink

18/10/21

1 item of Media coverage

Nieuwe pleister brengt ons dichterbij draagbare, alles-in-één gezondheidsmeter

David Fernandez Rivas

21/02/21

1 Media contribution

No needle, doc!

David Fernandez Rivas
12/03/21
1 item of Media coverage

No needle, doc!

David Fernandez Rivas
12/03/21
1 Media contribution

Opening up a path for solar energy

David Fernandez Rivas
16/10/18
1 item of Media coverage

Our skin is a platform

David Fernandez Rivas
21/03/19
1 Media contribution

Plots staat Cuba bovenaan in de coronagrafieken, artsen luiden noodklok om tekorten

David Fernandez Rivas
19/08/21
1 Media contribution

Prik angst (fear of injections)

David Fernandez Rivas & Michel Versluis
3/03/21
1 Media contribution

Prikken zonder naald: zuiniger en minder pijnlijk

David Fernandez Rivas & Miguel Angel Quetzeri Santiago
6/04/22
1 item of Media coverage

Radio NPO1 interview

David Fernandez Rivas
15/03/20
1 Media contribution

Rising star

David Fernandez Rivas
30/08/18
1 item of Media coverage

SPUITJE ZONDER PRIK; HIER KOMT DE NAALDLOZE INJECTIE

David Fernandez Rivas
6/05/19
1 Media contribution

Sobre inyecciones sin agujas - interview - needle-free injections

David Fernandez Rivas
21/10/21
1 Media contribution

Spreading entrepreneurial ambitions from an academic perspective

David Fernandez Rivas

26/04/17

1 item of Media coverage

Stembussen beste tech-idee 2017 zijn gesloten!

David Fernandez Rivas

15/09/17

1 item of Media coverage

Straaltje vloeistof doorboort druppel

David Fernandez Rivas & Miguel Angel Quetzeri Santiago

16/08/21

1 Media contribution

Tubantia Special coverage

David Fernandez Rivas

15/04/19

1 item of Media coverage

UT hoofddocent met injectie zonder naald genomineerd voor Prins Friso Prijs

David Fernandez Rivas

13/03/21

1 item of Media coverage

Vaccineren zonder naald: een perfecte vinding van UT-docent, maar het kan nog nét niet

David Fernandez Rivas

18/02/21

1 item of Media coverage

Van druppel naar toepassing

David Fernández Rivas & Detlef Lohse

17/11/22

1 Media contribution

Why empathy can make you a better entrepreneur

David Fernandez Rivas

9/06/22

1 Media contribution

Zweetverzamelende pleister kijkt truc af van cactusstekels

David Fernandez Rivas

10/11/21

1 Media contribution

¿Cuáles deberían ser las habilidades de los futuros ingenieros?

David Fernandez Rivas

8/06/22

1 Media contribution

'Slim shirt' houdt het hart in de gaten

David Fernandez Rivas

2/09/21

1 Media contribution

Awards

Projects