

CURRICULUM VITAE ABREVIADO (CVA)

Part A. PERSONAL INFORMATION

First Name and Family Name	Manuel Miró Lladó
Open Researcher and Contributor ID (ORCID)	0000-0002-8413-3008

A.1.A Current Position

Position	Full Professor-Catedrático de Universidad
Initial Date	13-09-2017
Institution	University of the Balearic Islands (UIB)
Department	Chemistry
Keywords	Exposomics, automation, millifluidics, 3D printing, emerging contaminants

A.1.B Current Professional Situation: Honorary Guest Professor by Charles University (Czech Republic) since July 2014

A.2. Previous positions

Period	Position/Institution/Country/Interruption cause
2002-2005	Post-doc researcher at TU-Berlin and TU-Denmark
2005-2007	Ramon and Cajal Researcher at UIB
2007-2017	Associate Professor at UIB

A.3. Education

Bachelor/MSc/PhD	University	Year
Bachelor+MSc (licenciatura)	University of the Balearic Islands (UIB)	1998
PhD	University of the Balearic Islands (UIB)	2002

Part B. Summary of CV

Dr. Manuel Miró is Full Professor in Analytical Chemistry at the University of the Balearic Islands (UIB) since 13th September 2017 at the age of 42. Since 2012 he is the Principal Investigator (IP) of the research group FI-TRACE (Flow Injection and Trace Analysis, www.fitrace.es) at UIB. He conducted research stays at the Technical University of Berlin, Technical University of Denmark, University of Natural Resources and Applied Life Science (BOKU) in Vienna, The University of Melbourne and Abo Akademi University in Finland. Since 2007 he is the Reviews Editor of the international journal *Analytica Chimica Acta* by Elsevier (2nd journal with the highest impact factor among those of multidisciplinary analytical chemistry) and IUPAC member (subcommittee VI) on Chemical and Biophysical Process in the Environment. In 2020, he was appointed core member of the European Group on *Sample Preparation* from EuChemS-Division of Analytical Chemistry. He is Associate Editor of the 3rd Edition of the *Encyclopaedia of Analytical Sciences*, Elsevier and Editor of a monograph on 3D printing in Analytical Chemistry (Elsevier) to be published in 2025. He was appointed Executive Editor of the journal *Analytical Science* (Springer) since 2020.

He has published 232 peer-reviewed publications, including 16 book chapters in International Publishers (100 publications over the last ten years), from which 26 articles in the top-tier *Analytical Chemistry* journal (ranked #1 in multi-scope analytical chemistry category) from the American Chemical Society are worth mentioning. He has published 181 articles in Q1 journals of which 55 articles were in D1 (first decile) reporting innovative platforms and analytical methodology for trace analysis in the fields of analytical chemistry and environmental science. It should be added that he is the corresponding author of 117 articles. His publication record shows a Hirsch (h) Index=44, a total number of citations of over 6500, with a citations/article ratio of 26.

Dr. Miró has given 74 oral communications (59 as invited (Plenary or Keynote) and 6 as Opening Lecturer) in international on environmental science and analytical chemistry. He has also presented 206 poster communications in national and international conferences.

Dr. Miró has supervised 10 PhD thesis (4 ongoing) at National and International Universities (2 co-supervised at the Universidade Federal de Bahia (Brazil), 2 at Technical University of Denmark, 1 at Chiang Mai University (Thailand), 1 at Mahidol University (Thailand) and 4 at UIB, all with European/International Distinction, and two of them as a sole supervisor). He

has also supervised short research visits of 41 national and international students at UIB. He has coordinated the visit of 20 invited International researchers at UIB; 4 Cooperation agreements with UIB, and 7 Erasmus contracts with Universities in Austria, Poland, Greece, Portugal, France and Czech Republic.

Dr. Miró has been awarded with the “*FIA Award for Science*” from the *Japanese Association of Analytical Chemistry* (2013) for “His Advances on Modern Flow Injection Analytical Methods, and Automatic Sample Processing”; and The “*Career Award-2018*” from Proteomass Scientific Society (Portugal) for “Outstanding contributions in the field of automation in analytical chemistry”.

He has participated in 38 national and international research projects, with 18 projects as Principal Investigator. It should be noted that Dr. Miró, over the last 10 years, has been IP of 7 National Projects (Plan Nacional de I+D+i) with references CTM2010-17214, CTM2014-56628-C3-3-R, CTM2014-61153-EXP, CTM2017-84763-C3-3-R, CTM2017-90890-REDT, PID2020-117686RB-C33 and TED2021-131303B-I00, including one National Thematic Network of Excellence on Emerging Contaminants and an EXPLORA-Science project on 3D printing in the environmental context.

Dr. Miró has been Committee member of the prestigious IUPAC awards: “*Emerging Innovator Award in Analytical Chemistry-2021*” and “*IUPAC Analytical Chemistry Medal-2021*” (2021); Frequent referee of the Spanish State Research Agency by assessing 6 research projects in Chemistry and Environmental Technology areas, and 3 Technician-personnel Projects, and is expert evaluator of the Czech Science Foundation since 2012.

Dr. Miro’s scientific achievements, in line with DORA recommendations, capitalized upon the development of miniaturized platforms based on the various generations of flow analysis, and more recently on the features of 3D printing for unmanned analysis of complex environmental samples, aimed at trace level concentrations of legacy and emerging contaminants. He has consolidated a novel research concept based on automatic dynamic bioaccessibility methods for trace elements and organic contaminants in environmental solids and microplastics. His know-how has been shared with more than 70 national, and oversea researchers with whom has set scientific collaboration, published articles and participated in research and applied projects (e.g., with the University of Melbourne, Charles University in Czech Republic and Metropolian University in Chile). His research outputs have been also transferred to stakeholders (Consejería de Recursos Hídricos from Balearic Islands), and the private sector (Enoc Solutions (pharma company) and Industrial Cluster of the Balearic Islands)). His research team FI-TRACE has been recently expanded to incorporate biochemists, marine scientists, animal physiologists and material chemists to cope with the societal challenges for which inter-disciplinary groups need to be strengthened.

Part C. RELEVANT MERITS

C1. Publications. All research articles with Dr. Miró as corresponding author and published over the last 5 yr. Those selected are the result from research projects

1. J. López-Vázquez, M. Miró*, J.B Quintana, R. Cela, P. Ferriol, R. Rodil, Bioaccessibility of plastic-related compounds from polymeric particles in marine settings: Are microplastics the principal vector of phthalate ester congeners and bisphenol A towards marine vertebrates?, **Science of the Total Environment** 954 (2024) 176308. IF: 8.2, D1& Q1

2. A. Sahragard, E. J. Carrasco-Correa, D.J. Cocovi-Solberg, P. Kubáň, M. Miró*, Enhancing the Concentration Capability of Nonsupported Electrically Driven Liquid-Phase Microextraction through Programmable Flow Using an All-In-One 3D-Printed Optosensor: A Proof of Concept, **Analytical Chemistry** 96 (2024) 11068–11075. IF: 6.8, D1& Q1

3. A. Sahragard, M. Dvořák, C. Pagan-Galbarro, E.J. Carrasco-Correa, P. Kubáň, M. Miró*, 3D-printed stereolithographic fluidic devices for automatic nonsupported microelectromembrane extraction and clean-up of wastewater samples, **Analytica Chimica Acta** 1297 (2024) 342362. IF: 5.7, D1& Q1

4. M. P. Garcia-Moll, L. Garcia-Moll, E.J. Carrasco-Correa, M. Oliver, E.F. Simo-Alfonso, M. Miró*, Biomimetic Dispersive Solid-Phase Microextraction: A Novel Concept for High-Throughput Estimation of Human Oral Absorption of Organic Compounds, **Analytical Chemistry** 95 (2023) 13123-13131. IF: 6.8. D1 & Q1.

- 5.L. García-Moll, A. Sixto, E.J. Carrasco-Correa, **M. Miró***, 3D-printed chemiluminescence flow cells with customized cross-section geometry for enhanced analytical performance, **Talanta** 255 (2023) 124211, **IF: 6.5. Q1**
6. E.J. Carrasco-Correa, J.M. Herrero-Martínez, E.F. Simó Alfonso, D. Knopp, **M. Miró***, 3D printed spinning cup-shaped device for immunoaffinity solid-phase extraction of diclofenac in wastewaters, **Microchimica Acta** 189 (2022) 173, **IF: 5.7. Q1**
7. A. Sahragard, M. Dvorak, E.J. Carrasco-Correa, P. Varanusupakul, P.Kuban, **M. Miró***, Programmable millifluidic platform integrating automatic electromembrane extraction clean-up and electrochemical detection, **ACS Sensors** 7 (2022) 3161–3168, **IF: 9.618. D1 & Q1.**
8. M.J. Trujillo-Rodríguez, R. Gomila, B. Martorell, **M. Miró***, Microscale extraction versus conventional approaches for handling gastrointestinal extracts in oral bioaccessibility assays of endocrine disrupting compounds from microplastic contaminated beach sand, **Environmental Pollution** 272 (2021) 115992, **IF: 8.071. Q1 & D1.**
9. E.J. Correa-Carrasco, D.J. Cocovi, J.M. Herrero-Martínez, E.F. Simó-Alfonso, **M. Miró***, 3D printed fluidic platform with in-situ covalently immobilized polymer monolithic column for automatic solid-phase extraction, **Anal. Chim. Acta** 1111 (2020) 40-48. **IF: 6.558. Q1.**
10. M. Oliver, M. Adrover, A. Frontera, J. Ortega-Castro, **M. Miró***, In-vitro prediction of the membranotropic action of emerging organic contaminants using a liposome-based multidisciplinary approach, **Sci. Total Environ.** 738 (2020) 40096, **IF: 7.963: Q1 & D1**

C.2. Research projects (those most innovative selected, last 10 years)

1. Reference: TED2021-130303B-I00 (ReefVOLUTION)
Title: Estrategias holísticas de biorremediación marina basadas en arrecifes artificiales
Principal Investigator: Manuel Miró. Granted by: MCIN/AEI/FEDER
Length from: 01/12/2022 to 30/01/2024. Budget: 184,000.00 €.
2. Title: Plataformas analíticas fluidicas para evaluar la exposición humana y ambiental a contaminantes emergentes. Reference: PID2020-117686RB-C33
Principal Investigator: Manuel Miró (subproject 3). Granted by: MCIN/AEI
Length from: 01/09/2021 to 30/08/2025. Budget: 217,000.00 €.
3. Title: Exposomic assessment of emerging contaminants in aquatic settings (AQUASOME)
Principal Investigator: Manuel Miró (subproject 3). Reference: CTM2017-84763-C3-3-R
Granting agency: Spanish State Research agency (Convocatoria Retos 2017)
Length from: 01/01/2018 to 30/09/2021. Budget: 173,030.00 €.
4. Title: Scientific network for risk assessment and exposure to emerging contaminants in marine environments (NET4SEA). Reference: CTM2017-90890-REDT
Principal Investigator: Manuel Miró. Granted by: MINECO/AE
Budget: 17,000 €. Length from: 01/07/2018 to 28/02/2021
5. Title: New methodologies for evaluation of the impact of emerging contaminants in marine ecosystems and consumers. **Principal Investigator: Manuel Miró** (subproject 3)
Reference: CTM2014-56628-C3-3-R. Granted by: MINECO (Call Retos-2014).
Length: 01/01/2015-31/12/2018. Budget: 119,790.00 €
6. Title: 3D printed fluidic platforms for oral bioavailability tests of environmental pollutants using a holistic approach. **Principal Investigator: Manuel Miró**
Reference: CTM2014-61553-EXP Granted by: MINECO (Call EXPLORA CIENCIA).
Length: 01/09/2015-30/06/2018. Budget: 65,500 €
7. Reference: CZ.02.1.01/0.0/0.0/15_003/0000465
Title: Establishment of Specialized Team for Advanced Research on Separation Science
Principal Investigator: Petr Solich (Charles University)
Granting Agency: Czech Ministry of Education/EU funds. Length: 1. 3. 2017 – 30. 10. 2022.
Role: **Advisory member/Strategic partner.** Budget: **5.4 million €**
8. Reference: CZ.02.1.01/0.0/0.0/16_019/0000841
Title: Efficiency and safety improvement of nutraceuticals: Advanced methods & challenges
Principal Investigator: Petr Solich (Charles University)
Granting Agency: Czech Ministry of Education/EU funds. Length: 1. 1. 2018– 31. 12. 2022
Role: **International Advisory member and Strategic partner.** Budget: **8,3 million €**

9. Title: The pollution potential of mercury in legacy biosolids and possibilities for its minimization by phytoremediation and phytostabilisation. (Reference: LP120200628)
Principal Inv.: Spas Kolev (Melbourne Univ.) Granting Agency: Australian Research Council
Length: 01/2012-12/2017. Budget: 342,000,00 €. Role: **Partner Investigator**

10. Title: Analytical methods based on dynamic fractionation for determination of bioaccessibility of environmental pollutants in soils, sediments and solid wastes.

Principal Investigator: Manuel Miró. Reference: CTM2010-17214 (TECNO)
Length: 01/2011-12/2014. Budget: 108,000.00 €. Granting agency: MINECO

C3. Conferences: All Opening/Plenary/Keynote lectures by Dr. Manuel Miró

1. Title: Physiologically-based extraction assays of plasticizers from microplastics: Is the 'Trojan-horse' effect hype or reality? (**Keynote**). 24th European Meeting on Environmental Chemistry, Alicante, 2024

2. Title: Electric-field driven liquid phase microextraction: Do we really need a solid membrane? (**Plenary**). 6th Int. Caparica Conference on Sample Treatment, Lisboa, 2023

2. Title: 3D-printed affinity and biomimetic sorptive phases: A new era of bioselective sorbents (**Keynote**). XXV International Symposium on Extraction Techn, Tenerife, 2023.

3. Title: 3D printing of sorptive phases: Potentials and limitations (**Plenary**). XXIV International Symposium on Advances in Extraction Techn., Chile, 2022

4. Title: 3D printed micro-FIA (3D- μ FIA): The fourth generation of flow analysis (**Plenary**). Flow Analysis XV, Krakow, Poland, 2022

5. Title: Bead Injection as In-line renewable solid-phase extraction approach (**Invited**). 1st European Conference on Sample Treatment-2021, on-line.

6. Title: 3D printing in sorptive (micro)extraction and membrane-separation (**Opening**). Caparica Conference on Sample Treatment, Portugal, 2021

8. Title: 3D Printing in Separation Science: Current Status and Future Perspective (**Opening**). 24th Norwegian Conference in Chromatography, Oslo, 2020.

9. Title: Automatic flow-through bioaccessibility methods for trace elements in environmental solids (**Opening**). 6^o Encontro Brasileiro de Especificação Química, Bahia, Brasil, 2019.

10. Title: Advanced fluidic platforms for automation of liquid-phase microextraction (**Keynote**). 20th International Symposium on Advances in Extraction Technologies, Iowa, USA, 2018.

C4. R+D+i contracts, technological and transfer merits

1. Contract title: Establishment of Research Team Focused on Experimental and Applied Biopharmacy (TEAB)

Principal Investigator: Petr Solich (Charles University)

Granting Agency: Ministry of Education, Youth and Sports of Czech Republic.

Length: 07/2012-06/2015. Budget (**UIB with M. Miró as IP**): 64,000.00 €

2. Contract title: Automatic analytical methods using a novel flow-based microextraction approach with renewable sorbents for trace level determination of priority contaminants

Ramon y Cajal research contract. **Principal Investigator: Manuel Miró**

Length: 01/09/2005-09/10/2007. Budget: 68,600.00 €

3. Patent title: Microdialysis probe for sampling and continuous monitoring in solid substrates

Authors: Manuel Miró (UIB) and Wolfgang Frenzel (TU Berlin)

Reference: P200402825/4. (Spanish Patent granted). Date: 2008

Title: Microdialysis probe for sampling and continuous monitoring in solid substrates

4. Patent title: 3D printed module for on-line monitoring of permeation tests

Authors: Hana Sklenarova, Petr Pavek, Burkhard Horstkotte, Manuel Miró

Reference: PCT/CZ2021/050031. Date: 2021. Application: International level