



CURRICULUM VITAE (CVA)

Part A. PERSONAL INFORMATION

CV date

07/07/2025

First name	Jesús Alberto		
Family name	Escarpa Miguel		
Gender (*)	Male	Birth date (dd/mm/yyyy)	
ID number			
e-mail		URL Web	
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-7302-0948		

(\*) Mandatory

A.1. Current position

Position	Full Professor of Analytical Chemistry		
Initial date	15/12/2017		
Institution	Universidad de Alcalá (UAH)		
Department/Center			
Country	Spain	Teleph. number	
Key words	Analytical miniaturization and nanotechnology, nanomaterials for optical and electrochemical (bio)-sensing, electrochemical microfluidics, lab-on-a-chip technology, micromotors		

A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
19/10/2001-14/12/2017	Associate professor of Analytical Chemistry
04/10/1996-03/10/2001	Assistant professor of Analytical Chemistry
01/03/1995-30/09/1996	Hired professor of Analytical Chemistry

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Chemistry Degree	Universidad de Alcalá	1993
PhD in Chemistry	Universidad de Alcalá	1998

Part B. CV SUMMARY

**Dr. Alberto Escarpa** is Full Professor of Analytical Chemistry at the University of Alcalá (UAH), where he founded and leads the “Analytical Miniaturization and Nanotechnology” (MINYNANOTECH) research group, established in 2003. His primary research interests include the design and development of lab-on-a-chip/organ-on-chip technologies, and artificial micromotors. He has co-authored over 200 publications in leading peer-reviewed international journals, holds 6 patents, and has contributed 11 book chapters, with an h-index of 57. His scientific contributions have been acknowledged with several prestigious awards including a NATO Fellowship to conduct postdoctoral research at New Mexico State University (USA) in 2001, the Young Investigator Award from the University of Alcalá in 2003, and finalist recognition for the International Dropsens Award for Best Research Work in Applied Electroanalytical Chemistry in 2015. Notably, he has been ranked among the top 2% most-cited chemists globally (positioned within the top 1%) by Stanford University from 2020 to 2023, and was recently awarded the **Research Excellence Award 2024** by

the Spanish Royal Society of Chemistry. His research has been highlighted in top journals such as *Angewandte Chemie*, *Chemical Science*, *Analytical Chemistry*, and *Lab on a Chip*, and has received wide coverage in several media. Prof. Escarpa is editor and contributor to several reference books, including *Miniaturization of Analytical Systems: Principles, Designs, and Applications* (Wiley, 2009), *Food Electroanalysis* (Wiley, 2015), and *Carbon-Based Nanomaterials in Analytical Chemistry* (RSC, 2018). He currently serves on the editorial boards of *Analytical Chemistry*, *Analysis & Sensing*, *Applied Materials Today*, *Journal of Nanobiotechnology*, and *Electrophoresis*. He was Associate Editor for *RSC Advances* (2015–2019) and *Microchimica Acta* (2018–2019), and has been **Editor-in-Chief of *Microchimica Acta*** since 2019. He has delivered over 50 invited lectures at top international forums in analytical micro- and nanotechnologies. His international academic appointments include visiting professorships at the University of California San Diego (USA), the International Center for Young Scientists at the National Institute for Materials Science (Japan), the University of Buenos Aires (Argentina), and Prince of Songkhla University (Thailand). He has also collaborated as a scientific partner with the Nanorobots Research Center in Prague (Czech Republic), and serves as a member of the Collegium of the Ph.D. in Food Science at the University of Teramo (Italy). Prof. Escarpa has supervised 23 PhD theses (18 with International Mention), which have collectively received 26 prestigious awards, including 13 Extraordinary Doctorate Awards, 7 Best Thesis Awards from the RSEQ-STM, the **Lilly-RSEQ Award (2020)**, the **National FUNCAS Award for Best Thesis in Health Sciences**, and 4 Best Thesis Awards from the Sociedad de Condueños of the University of Alcalá. His dedication to mentoring has been formally recognized with the **2021 Excellence Award in Doctoral Thesis Supervision (Sciences)** from the University of Alcalá. He has mentored two *Juan de la Cierva* postdoctoral researchers and hosted numerous international PhD students. Alumni from his group have secured academic and research positions in Spanish universities, research institutes, and companies. From 2018 to 2023, he also served as a collaborator for the Spanish State Research Agency (AEI) in the Chemistry area of the Coordination, Evaluation, and Scientific-Technical Monitoring Division.

## Part C. RELEVANT MERITS

**C.1. Most important publications in books and journals with "peer review" and in conferences** (*all as corresponding author concerning the research lines involved in the proposal, see CV summary*)

1. **A. Escarpa\***, B. Jurado-Sánchez\*. Micromotors meet collective (bio)sensing: the asset behind the assay. *Analytical Chemistry* 97, **2025**, 12913. IF: 5.3. Rank (Chemistry, Analytical): 10/111 (Q1). **Open access. Invited perspective**
2. C. Cuntín-Abal, J. Bujalance-Fernández, K. Yuan, A. Arribi, B. Jurado-Sánchez\*, **A. Escarpa\***. Magnetic bacteriophage-engineered Janus micromotors for selective bacteria capture and detection. *Advanced Functional Materials*, 34, **2025**, 2312257. IF: 19. Rank (Chemistry, Multidisciplinary): 13/241 (Q1). **Open access**
3. J. Gordón-Pindal, L. Arruza, M. Moreno-Guzmán, M.A. López, **A. Escarpa\***. Micromotor-based dual aptassay for early cost-effective diagnosis of neonatal. *Microchimica Acta*, 191, **2024**, 106. IF: 5.3. Rank (Chemistry, Analytical): 21/111 (Q1). **Open access**
4. Jyoti, A. Rodríguez, B. Jurado, M. Pumera, **A. Escarpa\***, Active quantum biomaterials-enhanced microrobots for food safety. *Small* 20, **2024**, 2404248. IF: 12.1 Rank (Chemistry, Multidisciplinary): 24/241 (Q1). **Open access**
5. J.M. Gordón Pidal, L. Arruza, M. Moreno-Guzmán, M.A López, **A. Escarpa\***. OFF- ON on-the-fly aptassay for rapid and accurate determination of procalcitonin in very low birth

- weight infants with sepsis suspicion. *Sensors & Actuators: B. Chemical* 378, **2023**, 133107. IF: 9.221. Rank (Chemistry, Analytical): 6/87 (Q1).
6. J.M. Gordón-Pidal, L. Arruza, M. D. Ibáñez, M. Moreno-Guzmán, M.A López\*, **A. Escarpa**.\* On the move-sensitive fluorescent aptassay on board catalytic micromotors for the determination of Interleukin-6 in ultra-low serum volumes for neonatal sepsis diagnostics. *ACS Sensors* 7, **2022**, 3144. IF: 8.9. Rank (Chemistry, Analytical): 4/86 (Q1). **Open access**
  7. K. Yuan, V. de la Asunción-Nadal, C. Cuntín-Abal, B. Jurado-Sánchez\*, **A. Escarpa**\*. On-board smartphone micromotor-based fluorescence assays. *Lab on a Chip* 22, **2022**, 928. IF: 7.517. (Chemistry, Analytical): 9/87 (Q1).
  8. K. Yuan, B. Jurado-Sánchez\*, **A. Escarpa**\* Dual-propelled lanibiotic based Janus micromotors for selective inactivation of bacteria biofilms. *Angewandte Chemie*, 60, **2021**, 4915. IF: 15.336. Rank (Chemistry, Multidisciplinary): 16/178 (Q1).
  9. A. Molinero-Fernández, M. A. López, **A. Escarpa**\*. Electrochemical microfluidic micromotors-based immunoassay for C-reactive protein determination in preterm neonatal samples with sepsis suspicion. *Analytical Chemistry* 92, **2020**, 5048. IF: 6,986; Rank (Chemistry, Analytical): 6/94 (Q1).
  10. A. Molinero Fernández, M. Moreno-Guzmán, L. Arruza, M. A. López\*, **A. Escarpa**\*. Polymer-based micromotors fluorescence immunoassay for on-the-move sensitive procalcitonin determination in very low birth weight infants' plasma. *ACS Sensors* 5, **2020**, 1336. IF: 7,711; Rank (Chemistry, Analytical): 6/83 (Q1).

## C.2. Congress.

1. **A. Escarpa**. (Photo)-catalytic Magnetic Micromotors: Dynamic Collective Biosensing for Disruptive Diagnosis. 3rd Edition NanoSeries Conference on Global Nanotechnology (#NanoSeries2024). Lisbon, (Portugal), June 17-19, 2024 (Invited)
2. **A. Escarpa**. Micromotors for smart bioassays: towards disruptive diagnosis. Nanomotors International Conference: 20th Anniversary. Barcelona, (Spain), June 2-5, 2024 (Invited)
3. **A. Escarpa**. Cutting-edge microtechnologies for analytical biosensing in the field of diagnosis. Convergence of Nanotechnology for Health Care Diagnostics Workshop. Hamburg, (Germany), February 22-23, 2024 (invited)
4. **A. Escarpa**. Micromotors in nanomedicine: biosensing on the fly for clinical diagnosis. 8th Thailand International Nanotechnology Conference (NanoThailand 2023). Pattaya (Thailand), November 29-December 1, 2023 (*Keynote*).
5. **A. Escarpa**. Micro swimmers-based collective biosensing for in vitro diagnosis: what is next? Nanobalkan2023 International Conference. Tirana, Albany, October 16-20, 2023 (*Keynote*).
6. **A. Escarpa**, J.M. Gordon, L. Arruza, M. Moreno, M.A. López. On-the-fly aptassays for neonatal sepsis diagnosis. 13th International Conference on Instrumental Methods of Analysis: Modern Trends and Applications. Chania-Crete (Greece), September 17-20, 2023 (*Oral Invited*).
7. **A. Escarpa**, B. Jurado, M.A. López. Catalytic micromotors in action for (bio)sensing applications. 4th European Biosensor Symposium. Aachen (Germany), August 27-30, 2023 (*Keynote*).
8. **A. Escarpa**, B. Jurado, M. A. López. Micromotors in action: smart microsensors swimming in a concept or a futuristic reality? 18TH IEEE International Conference on Nano/Micro Engineered and Molecular Systems, Jeju (Korea), May 14-17, 2023 (*Keynote*).
9. **A. Escarpa**, Electrochemical (bio)sensing in micro-size environments. 10<sup>th</sup> ElecNano. Paris (France), May 10-12, 2023 (*Plenary*).
10. **A. Escarpa**. Micromotors for (bio)-sensing and environmental applications: exploring their collective behavior. XXIX Congress of the Division of Analytical Chemistry of the Italian Chemical Society. Milazzo (Italy) September 11-15, 2022 (*Plenary*).

## C.3. Projects or research lines in which you have participated.

- 1. Title and Reference:** Innovative analytical microtechnologies based on 3D printing electrochemical microfluidics and micromotors for biosensing in the field of clinical diagnosis (PID2023-152298NB-I00). Funding Institution: Ministerio de Ciencia, Innovación y Universidades, **PIs: A. Escarpa** and B. Jurado. From/to: 01/09/2024-31/08/2027. Budget: 237.500 € and FPI fellowship associated to the project. **Ongoing**
- 2. Title and Reference:** New micromotor-based biosensing approaches for the analysis of biomarkers of cancer and bacterial infections (SBPLY/23/180225/000058). Funding Institution: Agencia de Investigación e Innovación de Castilla-La Mancha, **PIs: A. Escarpa** and B. Jurado. From/to: 01/04/2024-30/03/2027. Budget: 139.907,25 €. **Ongoing**
- 3. Title and Reference:** Innovative micromotor-based strategies for the removal of antibiotics and bacterial biofilms for safe water reuse (TED2021-132720B-I00). Funding Institution: Ministerio de Ciencia e Innovación. **PIs: A. Escarpa** and B. Jurado. From/to: 01/12/2022-30/11/2024. Budget: 161.000 €
- 4. Title and Reference:** Innovative (bio)-sensing approaches based on electrochemical microfluidics and artificial micromotors for clinical biomarkers analysis (PID2020-118154GB-I00). Funding Institution: Ministerio de Ciencia e Innovación. **PIs: A. Escarpa** and B. Jurado. From/to: 01/09/2021-31/08/2024. Budget: 217.800 € and FPI fellowship associated with the project.
- 5. Title and Reference:** Nanostructured (bio)-sensed "sample-to-result" platforms for latest-generation applications in clinical and food safety (S2018/NMT-4349). Funding Institution: Community of Madrid, TRANSNANOAVANSENS program. **PI and coordinator: A. Escarpa**. From/to: 01/01/2019 to 31/12/2022. Budget: 693.450 €.
- 6. Title and Reference:** Development of a multi-organ microfluidic chip platform for the in vitro study of neurodegenerative diseases (Y2020/NMT-6312 NEURO-CHIP-CM). Funding Institution: Community of Madrid, Synergy grant. **PI and coordinator: A. Escarpa**. From/to: 01/07/2021 to 31/06/2024. Budget: 667.700 €.
- 7. Title and Reference:** Micro motors-based device for early diagnosis of late-onset sepsis in very low birth weight neonates Funding Institution: Caixa Capital Risk. Obra Fundacion la Caixa. Caixa Impulse 2017 Program. **PI: A. Escarpa**. From/to: 01/11/2017 to 31/12/2020. Budget: 70.000 €.

#### **C.4. Participation in technology/knowledge transfer activities and exploitation of results.**

- 1. Inventors:** L. García Carmona, A. Martín, J. Sempionatto, M.C. González, **A. Escarpa**, J. Wang. **Application number:** 35894506. **Title:** Pacifier sensor for biomarker monitoring. **Applicant:** University of Alcalá/UCSD. **Country:** Spain/USA.
- 2. Inventors:** **A. Escarpa**, M.C. González, L. García Carmona, M. Moreno Guzmán. **Application number:** P201700139. **Title:** Portable device for the detection, diagnosis, and monitoring of tyrosinemia. **Applicant:** University of Alcalá. **Country:** Spain (Awarded best patent from the University of Alcalá in 2019).
- 3. Inventors:** A. Martín, **A. Escarpa**. **Application number:** ES 2554203 B2. **Title:** Disposable electrodes based on filtered conductive nanomaterials. **Applicant:** University of Alcalá. **Country:** Spain. (*Best national patent award (accessit) from the University of Alcalá*)
- 4. Inventors:** T. Sierra Gómez, A. Gonzalez-Crevillén, **A. Escarpa**. **Application number:** ES2893261B2 35894506. **Title:** Procedimiento para determinar el grado de glicosilación de la transferrina y equipo electroquímico para llevar a cabo dicho procedimiento. **Applicant:** University of Alcalá/UNED. **Country:** Spain. (*Best national patent award from the University of Alcalá*)