Curriculum vitae

Valentina Biagioni

PERSONAL DATA

E-mail	valentina.biagioni@uniroma1.it

ACADEMIC APPOINTMENTS

2023-	Postdoctoral Researcher, Sapienza University of Rome *Research topic: Momentum and mass transfer in microfluidic systems with applications to liquid chromatography and hydrodynamic chromatography (09/D2 ING-IND/24).*

ACADEMIC DEGREE

2019-2022	PhD in Chemical Processes for Industry and Environment (cum laude) Sapienza University of Rome *Research Topic: Transport of diluted suspensions in laminar flows with an application to size- based separation of biological samples in microfluidic and Lab-On-a-Chip devices*
2016-2019	Master Degree Chemical Engineering (110/110) Sapienza University of Rome. *Thesis: Three-dimensional effects on the separation of the size-based mesoscopic particles in Deterministic Lateral Displacement microfluidic devices.*
2013-2016	Bachelor Degree Chemical Engineering Sapienza University of Rome. *Thesis: Ispezione basata sul rischio di giunti saldati.*

PROFESSIONAL EXPERIENCE

2023-	Member of research group on: “Methane pyrolysis in molten media” in collaboration with ENEA Casaccia.
2023-	Member of research group on: “Methane cracking in molten metals” in collaboration with NEXTCHEM SPA.
06/2023-08/2023	Visiting postdoctoral researcher, ETH Zurich (CH) *Lab experience: 3D-Nanoprinting, microfabrication, fluorescence-based measurements of flow and mixing in microfluidic systems.*
08/2022-10/2022	Visiting PhD student, Vrije Universiteit Brussel, Brussel *Lab experience: Fluorescence-based measurements of flow and dispersion in microfluidic systems.*
2020-2022	Tutor of Chemical Engineering Thermodynamics (ING-IND/24) Sapienza University of Rome

PUBLICATIONS

2019-

Sperelli, F., **Biagioni,V.,** Gabriele, A., Murmura. M. A., Cerbelli,Stefano. (2024). Analytic prediction of the effective reaction rate for methane cracking in molten catalysts: Transition from kinetics-dominated to diffusion-limited regimes***. International Journal of Hydrogen Energy,*** 53, 554-561.

Biagioni, V. (2023). Boosting Hydrodynamic Chromatography Through Dc-electroosmotic flows. ***Chemical Engineering Transactions***, *100*, 367-372.

Biagioni, V., Venditti, C., Adrover, A., & Cerbelli, S. (2023). Fractionation of a Three-Particle Mixture by Brownian Sieving Hydrodynamic Chromatography. ***Chemical Engineering & Technology***.

Venditti, C., **Biagioni, V.**, Adrover, A., & Cerbelli, S. (2022). Impact of transversal vortices on the performance of open-tubular liquid chromatography**.** ***Journal of Chromatography A***, *1685*, 463623.

Borgogna, A., Iaquaniello, G., **Biagioni, V**., Murmura, M. A., Annesini, M. C., & Cerbelli, S. (2022). Estimate of the Height of Molten Metal Reactors for Methane Cracking. ***Chemical Engineering Transactions***, *96*, 427-432.

Biagioni, V., Cerbelli, S., & Desmet, G. (2022). Shape-Enhanced Open-Channel Hydrodynamic Chromatography. ***Analytical Chemistry***, *94*(46), 15980-15986.

Biagioni, V., and Cerbelli, S. (2022). 50-Fold Reduction of Separation Time in Open-Channel Hydrodynamic Chromatography via Lateral Vortices**. Analytical Chemistry**, 94(27), 9872-9879.

Biagioni, V., Venditti, C., Adrover, A., Giona, M., and Cerbelli, S. (2022). Taming Taylor-Aris dispersion through chaotic advection. **Journal of Chromatography A**, 1673, 463110.

Biagioni, V., Sow, A. L., Fagiolo, A. G., Adrover, A., and Cerbelli, S. (2021). Brownian sieving enhancement of microcapillary hydrodynamic chromatography. Analysis of the separation performance based on Brenner's macro-transport theory**. Journal of Chromatography A**, 1659, 462652.

Biagioni, V., Sow, A. L., Adrover, A.,and Cerbelli, S. (2021). Brownian sieving effect for boosting the performance of microcapillary hydrodynamic chromatography. Proof of concept. **Analytical Chemistry**, 93(17), 6808-6816.

Biagioni, V., Balestrieri, G., Adrover, A., and Cerbelli, S. (2020). Combining electrostatic, hindrance and diffusive effects for predicting particle transport and separation efficiency in deterministic lateral displacement microfluidic devices. **Biosensors**, 10(9), 126.

Biagioni, V., Adrover, A., and Cerbelli, S. (2019). On the three-dimensional structure of the flow through deterministic lateral displacement devices and its effects on particle separation. **Processes**, 7(8), 498.

Murmura, M. A., **Biagioni, V**., and Cerbelli, S. (2019). Numbering-up Strategies for Microfluidics- Assisted Water Treatment Processes: Deterministic Lateral Displacement for the Removal of Bacteria and Parasites as a Case Study. **CHEMICAL ENGINEERING**, 73.

CONFERENCES
(ORAL PRESENTATION)

2022-	**2023 AIChE annual meeting**, Orlando (FL) ***Biagioni, V****., Venditti, C., Adrover, A., Giona, M., and Cerbelli, S. (2023, November). Influence of Transversal Flows in Open-Tubular Liquid Chromatography (OTLC) and Hydrodynamic Chromatography (OTHDC). In 2023 AIChE Annual Meeting. AIChE.* **ICHEAP16**,16th International Conference on Chemical and Process engineering, Naples (Italy) ***Biagioni, V.*** *(2023). Boosting Hydrodynamic Chromatography Through Dc-electroosmotic Flows. Chemical Engineering Transactions, 100, 367-372.* **33rd International Symposium on Chromatography,** 2022, Budapest (HU) ***Biagioni, V****., Desmet, G., and Cerbelli, S. (2022, September). A Continuous Microfluidic Sieve for the Size-based Fractionation of Particle Suspensions and Colloids. In 33rd International Symposium on Chromatography–ISC 2022 (pp. 62-62). Hungarian Society for Separation Sciences.* **ACS Spring 2022**, March 2022, San Diego (CA) ***Biagioni, V****., and Cerbelli, S. (2022). Brownian sieving booster for HDC chromatography of continuous size-dispersed suspension. In 2022 ACS spring meeting.*
IT-SKILLS	Fortran 90, COMSOL Multiphysics, PRO II, MATLAB, Gnuplot, Office 365
LANGUAGES	Italian, English (B2)