

PERSONAL INFORMATION

Valentina Biagioni

WORK EXPERIENCE

2023- ■ Postdoctoral Researcher, Sapienza University of Rome

Research topic: Thermochemical energy storage.

Research topic: Momentum and mass transfer in microfluidic systems with applications to liquid chromatography and hydrodynamic chromatography.

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

EDUCATION AND TRAINING

2019-2023

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

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.

Bachelor Degree Chemical Engineering Sapienza University of Rome.

Thesis: Ispezione basata sul rischio di giunti saldati.

PERSONAL SKILLS

Mother tongue

Italian

Other language

English

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
C1	C1	B2	B2	C1

BIBLIOMETRICS INDICATORS:

TOTAL NUMBER OF PUBLICATIONS: 15, H-INDEX: 6, TOTAL NUMBER OF CITATIONS: 67

The total number of publications and citations refers exclusively to the 'Article' category in the Scopus database, covering the entire scientific production up to 26/02/2025.

Publications 2019-

Biagioni, V., Procopio, G., Brasiello, A., Turchetti, L., Cerbelli, S., and Murmura, M. A. (2024). Two-phase flow effect on methane conversion in pyrolysis reactors embedding molten salts or metals. *International Journal of Hydrogen Energy*, 93, 937-947.

Procopio, G., **Biagioni, V.**, and Giona, M. (2024). The Resistance of an Arbitrary Body in Confined Unsteady Stokes Flow. *Fluids*, 9(11), 260.

Sperelli, F., **Biagioni, V.**, Gabriele, A., Murmura, M. A., and Cerbelli, S. (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., and Cerbelli, S. (2023). Fractionation of a Three- Particle Mixture by Brownian Sieving Hydrodynamic Chromatography. *Chemical Engineering & Technology*.

Venditti, C., **Biagioni, V.**, Adrover, A., and 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., and Cerbelli, S. (2022). Estimate of the Height of Molten Metal Reactors for Methane Cracking. *Chemical Engineering Transactions*, 96, 427-432.

Biagioni, V., Cerbelli, S., and 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

34th International Symposium on Chromatography, 2024, Liverpool (UK) *Biagioni, V., Cerbelli, S., Desmet, G. Boosting the separation efficiency of Hydrodynamic Chromatography by shaping the cross-channel section*

23rd International Symposium on Field-and Flow-based Separations, 2024, Nantes (FR)

Biagioni, V. and Cerbelli, S. Influence of Transversal DC-Electroosmotic Flows on Dispersion Properties and Separation Efficiency in Hydrodynamic Chromatography

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).

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. 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.

Projects

Murmura, M, A., **Biagioni, V** (2025) Rapporto tecnico su sviluppo di modelli di per sistemi a ossidi solidi in modalità di elettrolisi o elettrolisi assistita (LA 1.1.8). Accordo di Programma Ministero della Transizione Ecologica - ENEA PNRR Ricerca e Sviluppo sull'Idrogeno 2022-2025 – Progetto: Piano Operativo della Ricerca sull'Idrogeno (POR H2).

Cerbelli, S., Annesini, M, C., Brasiello, A., Murmura, M, A., Procopio, G., and **Biagioni, V.** (2024) Thermochemical energy storage Progetto finanziato dall'Unione Europea – NextGeneration EU Piano Nazionale di Ripresa e Resilienza (PNRR)

Biagioni, V., Murmura, M, A., Annesini, M, C., Brasiello, A., Cerbelli, S. (2023) Produzione di idrogeno da pirolisi di biogas/biometano in bagni fusi: modellazione a supporto dello sviluppo di un sistema sperimentale su scala di laboratorio (LA1.7). Report Ricerca di Sistema Elettrico Accordo di Programma Ministero dell'Ambiente e della Sicurezza Energetica - ENEA Piano Triennale di Realizzazione 2022-2024 Obiettivo: *Decarbonizzazione* Progetto: 1.3 “*Progetto integrato Tecnologie dell'idrogeno*”.