

CURRICULUM VITAE

Dr. Davide Spanu

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Personal information

Date of birth: April 28th 1991

Place of birth: Como

Nationality: Italian

Current position

Postdoctoral fellow (University of Insubria)

Academic training

2019-2020 **Guest researcher**
Friedrich-Alexander-Universität Erlangen-
Nürnberg (FAU)
Erlangen, Germany

2019-2020 **Postdoctoral fellowship**
University of Insubria
Como, Italy

2019 **PhD degree in Chemical and Environmental
Sciences**
University of Insubria
Como, Italy

2017 – 2018 **Guest researcher**
Friedrich-Alexander-Universität Erlangen-
Nürnberg (FAU)
Erlangen, Germany

2015 **Master's degree in Chemistry** (cum laude)
University of Insubria
Como, Italy

Teaching experience

Dr. Spanu was assigned since 2019 as contract professor to Analytical Chemistry 2 Module B course in the BSc Chemistry and Industrial Chemistry degree at the University of Insubria. Course subjects include basic analytical chemistry and advanced instrumental analytical chemistry. Dr. Spanu was assigned from 2014 to 2019 as lab assistant to Analytical Chemistry 1 and 2 courses in the BSc Chemistry and Industrial Chemistry degree at the University of Insubria.

Academic year	Degree	Course	Credits
2018-2019	BSc Chemistry and Industrial Chemistry	Analytical Chemistry 2 Module B	6
2019-2020	BSc Chemistry and Industrial Chemistry	Analytical Chemistry 2 Module B	6

Research activity

Dr. D. Spanu authored/co-authored 10 papers (as of May 2020) in ISI catalogue journals, among which high-quality journals such as *ACS Catalysis* and *Applied Catalysis B: Environmental*. He has co-authored 10 communications in national and international conferences. His current h-index is 3, with more than 60 citations.

The applications of material science and heterogeneous (photo)catalysis directed to the solution of environmental problems, such as the design of innovative materials for water remediation and hydrogen production are the main research topics.

Dr. D. Spanu gained expertise in the photo(electro)chemistry field during his PhD. In this period, he has established international collaborations with high-level research groups.

He is currently working on topical issues such as the in-situ investigation of photocatalytic hydrogen evolution mechanisms in liquid phase using synchrotron X-ray absorption spectroscopy (XAS), the development of new synthetic strategies to produce well-defined tungsten oxide nanostructures and the production of new selective TiO₂-based photocatalysts for water remediation applications.

Due to the academic formation as analytical chemist, skills of Dr. D. Spanu were creatively exploited to solve some problems encountered during the study of photocatalytic processes.

In this context, Dr. D. Spanu proposed an innovative fast speciation method for the determination of inorganic arsenic species using for the first time Frontal Chromatography–Inductively Coupled Plasma–Mass Spectrometry (FC-ICP-MS) as analytical technique.

Secondarily, the collaborative nature of Dr. D. Spanu is visible in some of the publications here reported concerning, among others, the setup of procedures for the speciation analysis of trace elements and the development of new instrumental methods.

- **Publications in scientific journals**

- 1) "High-throughput, multi-batch system for the efficient microwave digestion of biological samples", D. Spanu, L. Butti, G. Boldrocchi, R. Bettinetti, D. Monticelli. *Analytical Sciences* (2020). DOI: 10.2116/analsci.19A004.
- 2) "ATR-MIR spectroscopy to predict commercial milk major components: A comparison between a handheld and a benchtop instrument", G. Gorla, M. Mestres, R. Boquè, J. Riu, D. Spanu, B. Giussani. *Chemometrics and Intelligent Laboratory Systems* (2020). DOI: 10.1016/j.chemolab.2020.103995.
- 3) "A Dewetted-Dealloyed Nanoporous Pt Co-Catalyst Formed on TiO₂ Nanotube Arrays Leads to Strongly Enhanced Photocatalytic H₂ Production", L. Ji, D. Spanu, N. Denisov, S. Recchia, P. Schmuki, M. Altomare. *Chemistry – An Asian Journal* (2019). DOI: 10.1002/asia.201901545.
- 4) "Introducing Frontal Chromatography–Inductively Coupled Plasma–Mass Spectrometry as a Fast Method for Speciation Analysis: The Case of Inorganic Arsenic" D.Spanu, D.Monticelli, L.Rampazzi, C.Dossi, S.Recchia. *Analytical Chemistry* (2019). DOI: 10.1021/acs.analchem.9b03279.
- 5) "Photocatalytic reduction and scavenging of Hg(II) over templated-dewetted Au on TiO₂ nanotubes", D. Spanu, A. Bestetti, H. Hildebrand, P. Schmuki, M. Altomare, S. Recchia. *Photochemical & Photobiological Sciences* (2019). DOI: 10.1039/C8PP00424B.
- 6) "Photoelectrocatalytic oxidation of As(III) over hematite photoanodes: A sensible indicator of the presence of highly reactive surface sites", D. Spanu, V. Dal Santo, F. Malara, A. Naldoni, A. Turolla, M. Antonelli, C. Dossi, M. Marelli, M. Altomare, P. Schmuki, S. Recchia. *Electrochimica Acta* (2018). DOI: 10.1016/j.electacta.2018.10.003.
- 7) "Templated Dewetting-Alloying of NiCu Bilayers on TiO₂ Nanotubes Enables Efficient Noble Metal-Free Photocatalytic H₂ Evolution", D. Spanu, S. Recchia, S. Mohajernia, O. Tomanec, S. Kment, R. Zbořil, P. Schmuki, and M. Altomare. *ACS Catalysis* (2018). DOI: 10.1021/acscatal.8b01190.
- 8) "Site-Selective Pt Dewetting on WO₃-Coated TiO₂ Nanotube Arrays: an Electron Transfer Cascade-Based H₂ Evolution Photocatalyst", D. Spanu, S. Recchia, S. Mohajernia, M. Altomare, P. Schmuki. *Applied Catalysis B: Environmental* (2018). DOI: 10.1016/j.apcatb.2018.05.061.
- 9) "A viscous film sample chamber for Laser Ablation Inductively Coupled Plasma – Mass Spectrometry", D. Monticelli, D. Civati, B. Giussani, C. Dossi, D. Spanu, S. Recchia. *Talanta* (2018). DOI: 10.1016/j.talanta.2017.10.060.
- 10) "Understanding microwave vessel contamination by chloride species"; S. Recchia, D. Spanu, D. Bianchi, A. Pozzi, C. Dossi, D. Monticelli, *Talanta* (2016). DOI: 10.1016/j.talanta.2016.05.073.

Congress contribution

Oral contribution:

- O1 *“Template-Dewetted Au Nanoparticles on TiO₂ Nanocavities for Photocatalytic Reduction and Scavenging of Hg(II)”*, M. Altomare, D. Spanu, P. Schmuki, S. Recchia, 237th ECS Meeting, Montreal (Canada), May 2020 (cancelled/rescheduled for COVID-19, see DOI: 10.1149/MA2020-01482717mtgabs)
- O2 *“Dewetting-Alloying of NiCu Bilayers on TiO₂ Surfaces for Noble Metal-Free Photocatalytic H₂ Evolution”*, M. Altomare, D. Spanu, S. Recchia, A. Minguzzi, P. Ghigna, P. Schmuki. 237th ECS Meeting, Montreal (Canada), May 2020 (cancelled/rescheduled for COVID-19, see DOI: 10.1149/MA2020-0111892mtgabs)
- O3 *“Frontal Chromatography-ICP-MS: a novel method for fast inorganic As(III) and As(V) speciation”*, D.Spanu, C.Dossi, D.Monticelli,, S.Recchia. XXVIII Congress of the Analytical Chemistry Division, Bari (Italy), September 2019.
- O4 *“Inorganic arsenic speciation in water sample: an ultrafast method based on frontal chromatography/ICP-MS”*, D. Spanu, M. Pinna, C. Dossi, S. Recchia. XXVII Congress of the Analytical Chemistry Division, Bologna (Italy), September 2018.
- O5 *“Migration tests on model antibacterial Ag NPs coatings”*, D.Spanu, S.Recchia, D.Monticelli. XXVIII Congress of the Analytical Chemistry Division, Giardini Naxos (Italy), September 2016.
- O6 *“Photoelectrochemical abatement of arsenic in water by hematite photoelectrodes”*, D. Spanu, F. Malara, A. Turolla, A. Naldoni, M. Antonelli, S. Recchia, V. Dal Santo. EUROPACAT 2017 13th European Congress on Catalysis, Firenze (Italy), August 2017.

Poster contribution:

- P1 *“Photocatalytic reduction and scavenging of Hg(II) over templated-dewetted Au on TiO₂ nanotubes”*, D. Spanu, M. Altomare, P. Schmuki, S. Recchia. SP7 7th International Conference on Semiconductor Photochemistry, Milano (Italy), September 2019.
- P2 *“ATR-FTIR spectroscopy to predict commercial milk major components: a comparison between a handheld and a benchtop instruments”*, G. Gorla, M. Mestres, R. Boquè, J. Riu, D. Spanu, B. Giussani. 10th Colloquium Chemiometricum Mediterraneum, Menorca (Spain), June 2019
- P3 *“Templated Dewetting-Alloying of NiCu Bilayers on TiO₂ Nanotubes Enables Efficient Noble Metal-Free Photocatalytic H₂ Evolution”*, D. Spanu, S. Recchia, S. Mohajernia, O. Tomanec, S. Kment, R. Zbořil, P. Schmuki, and M. Altomare. 69th Annual Meeting of the International Society of Electrochemistry, Bologna (Italy), September 2018.
- P4 *“A Cocatalytic Electron Transfer Cascade on TiO₂ Nanotubes for Photocatalytic H₂ Evolution”* M. Altomare, N. T. Nguyen, D. Spanu, S. Hejazi, P. Schmuki. 68th Annual Meeting of the International Society of Electrochemistry, Providence (USA), August 2017.

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Como, 20 May 2020

