

## Angelo Antonio D'ARCHIVIO

### Education

1990. University of Rome "La Sapienza" (Italy)- Degree in Chemistry cum laude (Thesis: "Intermolecular interactions in inclusion compounds")

1994. University of Rome "La Sapienza" (Italy) – Ph. D. in Chemical Sciences (Thesis: "Structural study of micellar aggregates of bile salts and interaction complexes between bile salts bilirubin-IXa or polypeptides")

### Academic Positions

1996-2004: Assistant Professor of General and Inorganic Chemistry, Department of Chemistry, Chemical Engineering and Materials, University of L'Aquila (Italy).

2005-present: Associate Professor of Analytical Chemistry, Department of Physical and Chemical Sciences, University of L'Aquila (Italy).

### Teaching Activity, Committees, and other Administrative Duties (University of L'Aquila)

Courses taught (1996-2009): General and Inorganic Chemistry, Laboratory of Chemistry, Structural Chemistry, Food Chemistry, Analytical Chemistry, Laboratory of Analytical Chemistry for bachelor and master's degree students.

Courses taught (2010-present): Analytical Chemistry I and Laboratory (9 credits), Analytical Chemistry II and Laboratory (9 credits) for bachelor students, Advanced Analytical Methods (6 credits) for master's degree students.

Thesis supervisor (2005-present): 6 PhD students, >90 Master and undergraduate students.

External examiner of 2 PhD thesis

2009-2018: Coordinator of Scientific Degrees Program-Chemistry (PLS-Piano Lauree Scientifiche-Chimica, Regione Abruzzo) promoted by Ministry of University and Research.

2019-present: Coordinator of the Degree Courses in Chemistry.

Member of the Committee for the PhD in Chemistry of Environment and Cultural Heritage (2006-2014) and PhD in Physical and Chemical Sciences (2014-2020).

### Editorial activities

Member of the Editorial Board of *Molecules* -Section Analytical Chemistry.

Manuscript reviewer for international journals including *Analytica Chimica Acta*, *Analytical Chemistry*, *Journal of Chromatography A*, *Journal of Chromatography B*, *Analytical and Bioanalytical Chemistry*, *Talanta*, *Journal of Separation Science*, *Molecules*, *Food Chemistry*, *Food Control*, *Food Analytical Methods*, *Journal of Food Composition and Analysis*.

Editor or co-Editor of the following Special Issues:

"Chromatographic Analysis of Pollutants". *Molecules*, 2019.

"Food Authentication, Tracing and Characterization: Novel Trends and Applications". *Molecules*, 2019. (Co-editor Biancolillo A.).

"Application of Analytical Methods in Food, Drug, and Natural Products Research" *Molecules*, 2020. (Co-editor Biancolillo A.).

"Novel Applications of Chemometrics in Analytical Chemistry and Chemical Process Industry". *Frontiers in Chemistry*, 2020 (Co-editors: Biancolillo A., Marini F., Vitale R.).

### Participation to funded projects

Participation to PRIN 1997, PRIN 2004, PRIN 2005, PRIN 2010-2011 projects co-founded by MIUR.

Research Project, Smart Clean Air City L'Aquila, Italian Ministry of Economic Development (MISE)

2014-2017: Advanced integrated systems for the abatement of urban atmospheric pollutants. Unit coordinator.

### Research Contracts

Sigma-Tau, Pomezia (Italy), 2001: Detection of radicals in pharmaceutical samples by Electron Spin

Resonance Spectroscopy.

Hortus Novus srl, L'Aquila (Italy) 2016-2020: Analytical characterisation of the components in natural extracts, investigation of their solubility and stability, and determination in biological fluids and tissues.

Majella National Park, Abruzzo (Italy) 2019-2020: Characterisation of endemic plant species, crop wild relatives and agronomical cultivars of Majella National Park by means of analytical methods combined with chemometrics.

### **Awards**

National Scientific Qualification as Full Professor 2018-2020: 03/A1 Analytical Chemistry.

### **Bibliometric Indicators (July 29, 2022)**

Scopus (Author ID: 35610920200): Citations 1847, H-index=26

Web of Science: Citations 1777, H-index = 26

Google Scholar: Citations 2122, H-index = 28

Articles in peer reviewed journals: 106

Accepted poster and oral presentations at national and international conferences: > 40

### **Research activity**

Research activity is focused on the application of chemometrics to the optimisation of experimental methods and the development of multivariate regression and classification models for the investigation of biological and environmental systems and for food traceability.

Specific interests are the following:

Development and validation of quantitative structure-retention relationships;

Development and validation of multi-variable linear and non-linear regression models for the prediction of chromatographic retention;

Cross-column prediction in gas- and liquid-chromatography;

Optimisation of analytical methods or extraction processes by means of multivariate statistics;

Food geographical traceability and authentication by discriminant and class-modelling approaches applied to multi-elemental, chromatographic or spectroscopic data.

Development of multi-block chemometric approaches for food discrimination and authentication.

### **Recent publications (2021-2022)**

Di Donato, F., Biancolillo, A., Foschi, M., D'Archivio, A.A. Application of SPORT Algorithm on ATR-FTIR Data: A Rapid and Green Tool for the Characterization and Discrimination of Three Typical Italian Pecorino Cheeses. (2022) *Journal of Food Composition and Analysis*, 114, art. no. 104784.

Biancolillo, A., D'Archivio, A.A., Marini, F., Vitale, R. Editorial: Novel Applications of Chemometrics in Analytical Chemistry and Chemical Process Industry. (2022) *Frontiers in Chemistry*, 10, 926309.

Camilli, L., Capista, D., Eramo, P., D'Archivio, A.A., Maggi, M.A., Lazzarini, A., Crucianelli, M., Passacantando, M. Synthesis of hydrophilic carbon nanotube sponge via post-growth thermal treatment. (2022) *Nanotechnology*, 33(24), art. no. 245707.

Biancolillo, A., Foschi, M., Di Micco, M., Di Donato, F., D'Archivio, A.A. ATR-FTIR-based rapid solution for the discrimination of lentils from different origins, with a special focus on PGI and Slow Food typical varieties. (2022) *Microchemical Journal*, 178, 107327

Biancolillo, A., D'Archivio, A.A. Transfer of gas chromatographic retention data among poly(siloxane)

columns by quantitative structure-retention relationships based on molecular descriptors of both solutes and stationary phases. (2022) *Journal of Chromatography A*, 1663, art. no. 462758.

Biancolillo, A., Aloia, R., Rossi, L., D'Archivio, A.A. Organosulfur volatile profiles in Italian red garlic (*Allium Sativum* L.) varieties investigated by HS-SPME/GC-MS and chemometrics. (2022) *Food Control*, 131, art. no. 108477.

Di Donato, F., Squeo, F., Biancolillo, A., Rossi, L., D'Archivio, A.A. Characterization of high value Italian chickpeas (*Cicer arietinum* L.) by means of ICP-OES multi-elemental analysis coupled with chemometrics. (2022) *Food Control*, 131, art. no. 108451.

Di Donato, F., Foschi, M., Vlad, N., Biancolillo, A., Rossi, L., D'Archivio, A.A. Multi-elemental composition data handled by chemometrics for the discrimination of high-value Italian pecorino cheeses. (2021) *Molecules*, 26 (22), art. no. 6875.

Reale, S., Biancolillo, A., Gasparrini, C., Di Martino, L., Di Cecco, V., Manzi, A., Di Santo, M., D'Archivio, A.A. Geographical discrimination of bell pepper (*Capsicum annum*) spices by (HS)-SPME/GC-MS aroma profiling and chemometrics. (2021) *Molecules*, 26 (20), art. no. 6177.

Foschi, M., Biancolillo, A., Vellozzi, S., Marini, F., D'Archivio, A.A., Boqué, R. Spectroscopic fingerprinting and chemometrics for the discrimination of Italian Emmer landraces. (2021) *Chemometrics and Intelligent Laboratory Systems*, 215, art. no. 104348.

Reale, S., Di Cecco, V., Di Donato, F., Di Martino, L., Manzi, A., Di Santo, M., D'Archivio, A.A. Characterization of the volatile profile of cultivated and wild-type Italian celery (*Apium graveolens* L.) varieties by HS-SPME/GC-MS. (2021) *Applied Sciences (Switzerland)*, 11 (13), art. no. 5855.

Di Donato, F., Biancolillo, A., Mazzulli, D., Rossi, L., D'Archivio, A.A. HS-SPME/GC-MS volatile fraction determination and chemometrics for the discrimination of typical Italian Pecorino cheeses. (2021) *Microchemical Journal*, 165, art. no. 106133-

Di Donato, F., Gornati, G., Biancolillo, A., D'Archivio, A.A. ICP-OES analysis coupled with chemometrics for the characterization and the discrimination of high added value Italian Emmer samples. (2021) *Journal of Food Composition and Analysis*, 98, art. no. 103842.

Di Donato, F., D'Archivio, A.A., Maggi, M.A., Rossi, L. Detection of Plant-Derived Adulterants in Saffron (*Crocus sativus* L.) by HS-SPME/GC-MS Profiling of Volatiles and Chemometrics. (2021) *Food Analytical Methods*, 14 (4), pp. 784-796.

Biancolillo, A., Di Donato, F., Merola, F., Marini, F., D'Archivio, A.A. Sequential data fusion techniques for the authentication of the P.G.I. Senise ("crusco") bell pepper. (2021) *Applied Sciences (Switzerland)*, 11 (4), art. no. 1709, pp. 1-11.