

PAOLA PELUSO

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CURRICULUM VITAE

MAIN RESEARCH INTERESTS

Chiral Chromatography and Molecular Recognition

- HPLC enantioseparations, method development, multimodal elution conditions
- Recognition mechanisms on polysaccharide-based chiral stationary phases
- Recognition mechanisms with cyclodextrin-based selectors
- Enantioseparation of atropisomeric compounds
- Design and preparation of new chiral stationary phases
- Applications of polysaccharide-based polymers for molecular recognition
- σ - and π -hole bonds
- Dispersion forces

Organic Chemistry

- Chirality
- Molecular recognition

LANGUAGES

- Italian
- English (CAE, Cambridge Assessment 186IT0305026, level C1)
- French

EDUCATION

- 2003 - PhD Degree in Chemical Sciences, Università Ca' Foscari di Venezia in the group of Prof. O. De Lucchi. Subject: *Desymmetrization reactions of polycyclic alkenes*.
- 1993 - Laurea (MS Degree) in Chemistry, Università degli Studi di Pisa in the group of Prof. Rita Menicagli. Subject: *Synthesis and applications of new chiral stationary phases based on 1,3,5-triazine derivatives*.

EDITORIAL ACTIVITY

- Member of the Editorial Board of Electrophoresis (Wiley) and Journal of Pharmaceutical and Biomedical Analysis Open.
- Guest Editor for *Molecules* (MDPI) – Special Issue “*Chiral Stationary Phases for Enantioseparations: Fundamentals, Preparation, Methods, Applications and Chiral Recognition Mechanisms*”.

COLLABORATIONS

- Prof. Bezhan Chankvetadze, Tbilisi State University, Tbilisi, Georgia.
- Dr. Victor Mamane, Institut de Chimie de Strasbourg, France, UMR CNRS 7177, Equipe LASYROC.

PUBLICATIONS 2023-2026

1. Peluso, P.; Mamane, V. Ferrocene derivatives with planar chirality and their enantioseparation by liquid-phase techniques, *Electrophoresis* **2023**, *44*, 158-189 (invited article on Special Issue Young and Inspiring Scientists).
2. Dallochio, R.; Dessì, A.; Sechi, B.; Chankvetadze, B.; Jibuti, G.; Cossu, S.; Mamane, V.; Peluso, P. Enantioseparation of planar chiral ferrocenes on cellulose-based chiral stationary phases: benzoate versus carbamate pendant groups, *Electrophoresis* **2023**, *44*, 203-216 (invited article on Special Issue Young and Inspiring Scientists).
3. Peluso, P.; Landy, D.; Nakhle, L.; Dallochio, R.; Dessì, A.; Krait, S.; Salgado, A.; Chankvetadze, B.; Scriba, G. K. E. Isothermal titration calorimetry and molecular modeling study of the complex formation of daclatasvir by γ -cyclodextrin and trimethyl- β -cyclodextrin, *Carbohydrate Polymers* **2023**, *313*, 120870.
4. Sechi, B.; Mamane, V.; Dallochio, R.; Dessì, A.; Cossu, S.; Jibuti, G.; Peluso, P. Enantioseparation of new axially chiral carboxylic acids on polysaccharide-based chiral stationary phases under normal phase elution conditions, *J. Pharm. Biomed. Anal. Open* **2023**, *1*, 100011.
5. Sechi, B.; Dessì, A.; Dallochio, R.; Tsetskhladze, N.; Chankvetadze, B.; Pérez-Baeza, M.; Cossu, S.; Jibuti, G.; Mamane, V.; Peluso, P. Unravelling dispersion forces in liquid-phase enantioseparation. Part I: Impact of ferrocenyl versus phenyl groups, *Anal. Chim. Acta* **2023**, *1278*, 341725. <https://doi.org/10.1016/j.aca.2023.341725>
6. Dallochio, R.; Dessì, A.; Sechi, B.; Peluso, P. Molecular dynamics simulations of amylose- and cellulose-based selectors and related enantioseparations in liquid phase chromatography, *Molecules* **2023**, *28*, 7419 (invited article on Special Issue Advances in Chiral Analysis).

7. Peluso, P.; Chankvetadze, B. Recent developments in molecular modeling tools and applications related to pharmaceutical and biomedical research, *J. Pharm. Biomed. Anal.* **2024**, 238, 115836 (invited article on Special Issue PBA Reviews 2023).
8. Peluso, P.; Sechi, B.; Jibuti, G. Enantioseparation of organometallic compounds by electromigration techniques, *Electrophoresis* **2024**, 45, 1018-1032 (invited article on Special Issue Electrophoresis on Enantioseparations 2024).
9. Kobidze, G.; Sprega, G.; Daziani, G.; Balloni, A.; Lo Faro, A.F.; Farkas, T.; Peluso, P.; Basile, G.; Busardò, F.P.; Chankvetadze, B. Separation of undeuterated and partially deuterated enantioisotopologues of some amphetamine derivatives on achiral and polysaccharide-based chiral columns in high-performance liquid chromatography, *J. Chromatogr. A* **2024**, 1718, 464709 (Virtual Special Issue: HPLC 2023).
10. Peluso, P.; Mamane, V.; Spissu, Y.; Casu, G.; Dessì, A.; Dallochio, R.; Sechi, B.; Palmieri, G.; Rozzo, C. Iodinated 4,4'-bipyridines with antiproliferative activity against melanoma cell lines, *ChemMedChem* **2024**, 19, e202300662.
11. Sprega, G.; Kobidze, G.; Lo Faro, A.F.; Sechi, B.; Peluso, P.; Farkas, T.; Busardò, F.P.; Chankvetadze, B. Separation of isotopologues of amphetamine with various degree of deuteration on achiral and polysaccharide-based chiral columns in high-performance liquid chromatography, *J. Chromatogr. A* **2024**, 1730, 465062.
12. Sechi, B.; Cossu, S.; Peluso, P. Enantioseparation of organometallic compounds and metal complexes by liquid chromatographic techniques. A review, *J. Chromatography Open* **2024**, 6, 100147 (invited article on Special Issue Recent advances in enantioseparations).
13. Peluso, P.; Dallochio, R.; Dessì, A.; Salgado, A.; Chankvetadze, Scriba, G.K.E. Molecular modeling study to unravel complexation of daclatasvir and its enantiomer by β -cyclodextrins. Computational analysis using quantum mechanics and molecular dynamics, *Carbohydrate Polymers* **2024**, 346, 122483. <https://doi.org/10.1016/j.carbpol.2024.122483>
14. Sechi, B.; Tsetskhadze, N.; Connell, L.; Dessì, A.; Dallochio, R.; Chankvetadze, B.; Cossu, S.; Khatiashvili, T.; Mamane, V.; Peluso, P. Unravelling dispersion forces in liquid-phase enantioseparation. Part II: planar chiral 1-(iodoethynyl)-3-arylferrocenes, *Anal. Chim. Acta* **2024**, 1327, 343160. <https://doi.org/10.1016/j.aca.2024.343160>
15. Kobidze, G.; Sprega, G.; Lo Faro, A.F.; Belloni, A.; Peluso, P.; Farkas, T.; Karchkhadze, M.; Basile, G.; Busardò, F.P.; Chankvetadze, B. Insights into separation, enantioseparation and recognition mechanisms of methamphetamine isotopologues on achiral and polysaccharide-based chiral columns in high-performance liquid chromatography, *Anal. Chim. Acta* **2025**, 1337, 343542. <https://doi.org/10.1016/j.aca.2024.343542>
16. Jorbenadze, S.; Sprega, G.; Chelidze, A.; Sechi, B.; Dallochio, R.; Chankvetadze, B.; Di Marzo, V.; Villano, R.; Peluso, P. First separation of commendamide enantiomers, *J. Pharm. Biomed. Anal.* **2025**, 255, 116643. <https://doi.org/10.1016/j.jpba.2024.116643>
17. Lipka, E.; Dallochio, R.; Sechi, B.; Rukhaia, M.; Jibuti, G.; Chankvetadze, B.; Mamane, V.; Peluso, P. Insights into the enantioseparation of polyhalogenated 4,4'-bipyridines with a cellulose tris(3,5-dimethylphenylcarbamate)-based chiral column by using supercritical fluid chromatography, *Electrophoresis* **2025**, 46, 702-715.
18. Rurua, A.; Shanidze, M.; Tsetskhadze, N.; Salgado, A.; Peluso, P.; Dallochio, R.; Scriba, G. K. E.; Malanga, M.; Beni, S.; Chankvetadze, B. Understanding the mechanisms of enantiomer binding and recognition with cyclodextrins by integrating capillary electrophoresis, nuclear magnetic resonance, and quantum mechanics, *Carbohydrate Polymers* **2025**, 368, 124173.
19. Kobidze, G.; Sprega, G.; Matsiashvili, T.; Lo Faro, F.; Basile, G.; Peluso, P.; Farkas, T.; Busardo, F.P.; Chankvetadze, B. Isotope-effects in high-performance liquid chromatography: First baseline separation of isotopomers on achiral and chiral columns, *Analytical Chemistry* **2025**, 97, 17813-17824.
20. Sechi, B.; Dessì, A.; Dallochio, R.; Jorbenadze, S.; Tchaturia, N.; Chankvetadze, B.; Cossu, S.; Matarashvili, I.; Mamane, V.; Peluso, P. Unravelling dispersion forces in liquid-phase enantioseparation. Part III: Interplay between dispersion, repulsion, and hydrophobic forces in the enantioseparation of planar chiral 3-substituted-1-iodoethynylferrocenes, *Anal. Chim. Acta* **2026**, 1382, 344853. <https://doi.org/10.1016/j.aca.2025.344853>

Book Chapters

1. Peluso, P.; Chankvetadze, B. Fundamentals of enantioselective liquid chromatography, in *Liquid Chromatography: Fundamentals and Instrumentation*, Vol 1, Third Edition, Edited by Fanali, S.; Chankvetadze, B.; Haddad, P. R.; Poole, C. F.; Riekkola, M. -J., Elsevier 2023.
2. Peluso, P.; Chankvetadze, B. Application of enantioselective liquid chromatography, in *Liquid Chromatography: Applications*, Vol 2, Third Edition, Edited by Fanali, S.; Chankvetadze, B.; Haddad, P. R.; Poole, C. F.; Riekkola, M. -J., Elsevier 2023.

INVITED LECTURES 2025-2026

1. 31st International Symposium on Electro- and Liquid Phase-Separation techniques (ITP 2025), Ankara – Türkiye, August 24-27, **2025**. *Mechanistic Aspects in Enantioselective Liquid-Phase Separations*.
2. 32nd International Symposium on Electro- and Liquid Phase-Separation techniques (ITP 2026), Guangzhou – China, November 8-11, **2026**. *Application of molecular modelling in enantioselective liquid-phase separation techniques: advances and new challenges*.