

PIETRO MATRICARDI
Curriculum Vitae

Full Name: Pietro Matricardi
Date of Birth: Sept 5th, 1964
Place of Birth: Latisana (Udine) - Italy
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Bibliometric data (Scopus)

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SUMMARY OF SCIENTIFIC ACHIEVEMENTS

Product type	Number
Papers	116
Book chapter	5
Patents	5 (active)

Index	Database	Value
Hirsch (H) index	Scopus	39
Total Citations	Scopus	4,800

EDUCATION

Type	Year	Institution	Notes (Degree, Experience)
<i>University graduation</i>	1989	University of Rome "La Sapienza"	Degree in Chemistry, 110/110 cum laude
<i>Post-graduate studies</i>	1994	University of Rome "La Sapienza"	PhD in Chemical Sciences (Dottorato di ricerca in Scienze Chimiche, VI Ciclo)
<i>Specialty</i>	2000	University of Camerino	Waste management (Scuola di specializzazione per la gestione e smaltimento dei rifiuti)
<i>Specialty</i>	1995	University of Rome "La Sapienza"	Health and Safety at Workplace (Corso di perfezionamento in chimica e ambienti di lavoro)
<i>Licensure</i>	1992	Provveditorato agli studi di Roma e Provincia	Teaching Qualification for secondary high school (Abilitazione all'insegnamento della chimica, classe A013, nelle scuole medie superiori)
<i>Licensure</i>	1990	University of Rome "La Sapienza"	Chemist profession Qualification. LUAM Registration Number 2413

ACADEMIC APPOINTMENTS

Start	End	Institution	Position
2004	2019	University of Rome "La Sapienza"	Assistant Professor
2019	2021	University of Rome "La Sapienza"	Associate Professor
2021	to present	University of Rome "La Sapienza"	Full Professor

OTHER ACADEMIC APPOINTMENTS

Start	End	Institution	Position

2023	To present	Ministero dell'Università e Ricerca	Member of the board for the "Abilitazione Scientifica Nazionale", 03D2
2020	2023	Elettra - Sincrotrone Trieste S.C.p.A.	Member of the board of directors
2019 & 2021		Institut d'études avancées Maison internationale de la recherche, ERMECCe, Université de Cergy-Pontoise	"Invited Researcher" - Paris - Prof. Emanuel Pauthe and Prof. Violeta Rodriguez – 1 month
2017 & 2016		Université Paris 13 Institut Galilée - INSERM U1148, Laboratoire de Recherche Vasculaire Translationnelle	"Invited Visiting Professor" - Paris - Prof. Didier Letourneur and Graciela Pavon David -1 month
2018	To present	Sapienza University of Rome	Head of the Advanced School on "Methodologies in the Pharmaceutical Industry"
2018	to present	Sapienza University of Rome	Head of the degree "Applied Pharmaceutical Sciences"
2008	2021	Sapienza University of Rome	Responsible for the Erasmus Mobility
2008	to present	Sapienza University of Rome	Member of the Committee for the admission to the PhD school in "Pharmaceutical Sciences" Tutor of 7 PhD students in Pharmaceutical Sciences Tutor of 4 Erasmus PhD students and 7 master degree students Tutor of more than 60 master degree theses
2008	to present	18 European and Italian Universities	Board for the Conferral of Doctoral Degree
2008	to present	20 European and Italian Universities	Evaluator of PhD thesis for the admission to the final defence

TEACHING

Years	Institution	Lecture/Course
2022-currently	Università Cattolica del Sacro Cuore	"Legislazione Farmaceutica e Dispositivi Medici", Corso di Laurea in Farmacia, 3 CFU, 24 h
2012 -currently	Sapienza University of Rome	"Tecnologia e Legislazione farmaceutiche", Corso di Laurea in Chimica e Tecnologia Farmaceutiche, 10 CFU, 64 h and 40 h lab training
2017 - currently	Sapienza University of Rome	"Tecnologia e Legislazione dei prodotti erboristici", Corso di Laurea in Scienze Farmaceutiche Applicate, 6 CFU, 48 h
2005-2015	Sapienza University of Rome	Polymers in Pharmaceutical Technology (Polimeri di interesse farmaceutico), Corso di Laurea in Chimica e Tecnologia Farmaceutiche, 8 CFU, 64 h
2005-2012	Sapienza University of Rome	Laboratory tutor, "Tecnologia, socio-economia e legislazione farmaceutiche", Corso di Laurea in Chimica e Tecnologia Farmaceutiche, 32 h
2005-2010	Sapienza University of Rome	"Prevenzione e Sicurezza nei laboratori", Corso di Laurea in Chimica e Tecnologia Farmaceutiche, 4 CFU, 32 h
2006, 2010, 2013, 2018	ADRITELF	PhD advanced school - Cosenza (on hydrogels and rheology).

SOCIETY MEMBERSHIPS, AWARDS AND HONORS

Years	Title
2010 –	CRS (Controlled Release Society) Italy Chapter. 2013-2016: Member of the Board – Treasurer 2017–2019: President of the Board
2004 –	ADRITELF (Associazione Docenti e Ricercatori di Tecnologia e Legislazione Farmaceutiche) - member
2015 -	Society for Biohydrogels – Member of the Board
2014 -	SIR (Società Italiana di Reologia) – Member of the board
2014 -	SCI (Società Chimica Italiana) - Member

2007	Journal of Controlled Release (2007) 119, 5-24. Doi: 10.1016/j.jconrel.2007.01.004. Elsevier award, top ten cited paper in 2007
2013	Macromolecular Bioscience, (2013), 13, 1185–1194. Doi: 10.1002/mabi.201300114. Cover of the issue
2014	European Journal of Pharmaceutics and Biopharmaceutics, (2014) 87 (1) 208-216. Doi: 0.1016/j.ejpb.2013.11.001. Best paper award in EJPB 2014
2014	Antibiotic alternatives for the new millennium, London, November 2014. Best poster award
2015	55° Simposio AFI, Rimini, Italy, 10-12 giugno 2015. Best poster award

OTHER ACTIVITIES

Year	Activity
2018	Guest Editor of some special Issues on MDPI journals
2004 –	Invited lecturer and oral presentations at national and international conferences: 19
2004 –	Member of the organizing/scientific committee of 3 international and 8 national conferences and workshops
2004 –	Collaboration with international research groups: <ul style="list-style-type: none"> • prof. Wim Hennink, Tina Vermonden, Utrecht University, Utrecht, NL; • prof. Vladimir Torchilin, Northeastern University, Boston, USA; • prof. Erik Geissler, CNRS UMR 5588, Université J. Fourier de Grenoble, Grenoble, France; • prof. Maria Dolores Veiga, Universidad Complutense de Madrid, Spain; • prof. Pierre Weiss, LIOAD, UMR 791, Faculté d'Odontologie, Nantes, France.; • Prof. Cecile Dreiss, King's College, London, UK; • Prof. Didier Letourneur, Graciela Pavon Djavid, INSERM U1148- Université Paris 13, Sorbonne Paris Cité • Marta Tamano, Alicante and Valencia MH University • Prof. Elias Fattal, Institut Galien Paris-Saclay@UMR CNRS 8612
2004 –	Collaborations and Research agreements with Italian companies: FAB - Fidia Advanced Biopolymer, Padova; Tubilux Pharma, Pomezia, Roma; Sigma Tau, Pomezia, Roma; Novagenit, Trento; MicMedical, Roma; OTI Srl, Carsoli, (AQ), QI Srl, Pomezia, Roma, Unifarco (Belluno), Schalcon (Roma), Omisan (Roma).
2004 –	Reviewer for several international journals (more than 15) focused on drug delivery and biomaterials and member of the editorial board of two journals (Pharmaceutics, Biomolecules)
2004 –	Project evaluator for some national and European (H2020) agencies

RESEARCH ACTIVITIES

Keywords

Polysaccharide Hydrogels, Drug Delivery, Tissue Regeneration, Physico-chemical Characterization, Liposomes, Topical Delivery

Ongoing researches

My research activity can be described using four keywords: polysaccharides, hydrogels, physico-chemical characterization, and biomedical applications. The aim of the research is the development and characterization of new polymeric matrices of soft and/or hydrogel nature, mainly based on polysaccharides, useful for applications in drug delivery and tissue engineering. Specifically:

- Physico-chemical characterization of polysaccharide matrices in solution and the gel phase, with particular attention to matrices based on: scleroglucan and scleroglucan/borax, alginate and calcium alginate, dextran and dextran methacrylate derivatives. The characterization was finalized to define the nature and type of interactions that occur between the matrix of polymers and the low molecular weight molecules used for the realization of the three-dimensional networks in the hydrogels. Particular interest is devoted to the characterization of the properties of matrices formed by the interpenetration of polysaccharide macromolecules (semi-interpenetrated and Interpenetrated Polymer Networks – semi-IPN and IPN). The studied systems, even for possible synergistic effects in their mechanical properties, are mainly: alginate/scleroglucan; alginate/dextran derivatives; and gellan/dextran derivatives.
- Development of innovative systems for drug delivery and of new matrices for tissue engineering applications, based on alginate, hyaluronic acid, dextran and gellan. These matrices prepared in solid form or as hydrogels, have been studied for their ability to carry and deliver drugs, in different aqueous media. In this respect, we used model molecules with different chemical and physico-chemical characteristics. In particular, we studied the transport and release properties of monolithic systems (microspheres, hydrogel tablets) in the form of polysaccharide IPNs. For some of the hydrogel matrices, we have also evaluated the ability to act as a biocompatible support for applications in tissue engineering applications. Part of the research was devoted to the interaction of polysaccharides with liposomal systems.
- Development of new systems, in the form of "nano" structures based on derivatized polysaccharides to transport and deliver drugs and proteins. In particular, these nanoparticle systems were prepared by self-assembly (bottom-up and top-down mechanism) of the polysaccharide chains, preliminarily derivatized by hydrophobic moieties.

The various hydrogel systems developed have been characterized in terms of their chemical and physico-chemical properties. Characterizations are carried out using: HPLC, GC, GPC, capillary viscometry, polarimetry, NMR, UV / fluorimetry, SEM, TEM, optical microscopy, confocal microscopy, "in silico", rheology and dynamo-mechanical analysis. Various assemblies have been developed for the preparation of hydrogels for the delivery of drugs and proteins, for the production of medical devices, or suitable as scaffolds for

tissue engineering applications: "implantable hydrogels"; "hydrogels as a support for nano vesicular systems"; "in situ forming hydrogels"; "beads" and "microspheres"; "antimicrobial patches for wound healing"; "nanohydrogels obtained by self-assembly".

LAST 5 YEARS PUBLICATIONS

Francesca Di Turo, Pietro Matricardi, Chiara Di Meo, Franco Mazzei, Gabriele Favero, Daniela Zane
"PVA hydrogel as polymer electrolyte for Electrochemical Impedance analysis on archaeological metals"
Journal of Cultural Heritage, (2019), 37 113-120 DOI: 10.1016/j.culher.2018.09.017

M. Costanzo, F. Vurro, B. Cisterna, F. Boschi, A. Marengo, E. Montanari, C. Di Meo, P. Matricardi, G. Berlier, B. Stella, S. Arpico, M. Malatesta
"Uptake and intracellular fate of biocompatible nanocarriers in cycling and non-cycling cells"
Nanomedicine, (2019), 14, 301-316. DOI 10.2217/nnm-2018-0148

E. Montanari, N. Zoratto, L. Mosca, L. Cervoni, E. Lallana, R. Angelini, T. Coviello, C. Di Meo, P. Matricardi
"Halting hyaluronidase activity with hyaluronan-based particles. Development of smart and versatile injectable materials"
Carbohydrate Polymers, (2019) 221, 209-220. DOI: 10.1016/j.carbpol.2019.06.004

Nicole Zoratto, Isabelle Grillo, Pietro Matricardi, Cecile A. Dreiss
"Supramolecular gels of cholesterol-modified gellan gum with disc-like and worm-like micelles"
Journal of Colloid and Interface Science, (2019) 556, 301-312. DOI: 10.1016/j.jcis.2019.08.057

Elita Montanari, Chiara Di Meo, Tommasina Coviello, Virginie Gueguen, Graciela Pavon-Djavid, Pietro Matricardi
"Intracellular delivery of natural antioxidants via hyaluronan nanohydrogels"
Pharmaceutics, (2019) 11, 532. DOI:10.3390/pharmaceutics11100532

Giuseppe Gallelli, Erika Cione, Raffaele Serra, Antonio Leo, Rita Citraro, Pietro Matricardi, Chiara Di Meo, Francesco Bisceglia, Maria C. Caroleo, Sonia Basile, Luca Gallelli
"Nano-hydrogel embedded with quercetin and oleic acid as a new formulation in the treatment of diabetic foot ulcer: A pilot study"
International Wound Journal, (2020) 17, 485-490. DOI: 10.1111/iwj.13299

Nicole Zoratto, Roberto Matassa, Elita Montanari, Giuseppe Familiari, Stefania Petralito, Tommasina Coviello, Chiara Di Meo, Pietro Matricardi
"Glycerol as a green solvent for enhancing the formulation of dextran methacrylate and gellan-based semi-interpenetrating polymer networks"
Journal of Materials Science, (2020) 55(22), 9562-9577. DOI: 10.1007/s10853-020-04732-1

Chiara Genova, Emma Zoppis, Alessandro Grottoli, Claudia Cencetti, Pietro Matricardi, Gabriele Favero
"Integrated approach to the recovery of Travertine biodegradation by combining phyto-cleaning with genomic characterization"
Microchemical Journal, (2020) 156, 104918. DOI: 10.1016/j.microc.2020.104918

Elita Montanari; Patrizia Mancini; Filippo Galli; Michela Varani; Iolanda Santino; Tommasina Coviello; Luciana Mosca*; Pietro Matricardi*; Fiorenza Rancan; Chiara Di Meo
"Biodistribution and intracellular localization of hyaluronan and its nanogels. A strategy to target intracellular *S. aureus* in persistent skin infections"
Journal of Controlled Release (2020), 326, 1-12. DOI: <https://doi.org/10.1016/j.jconrel.2020.06.007>

Chiara Di Meo, Tommasina Coviello, Pietro Matricardi, Raffaele Lamanna
"Anomalous enhanced water diffusion in polysaccharide interpenetrating hydrogels"
Colloids and Surfaces A, (2021), 613, 125892. DOI: 10.1016/j.colsurfa.2020.125892

Franco, Silvia; Buratti, Elena; Ruzicka, Barbara; Nigro, Valentina; Zoratto, Nicole; Matricardi, Pietro; Zaccarelli, Emanuela; Angelini, Roberta
"Volume fraction determination of microgel composed of interpenetrating polymer networks of PNIPAM and Polyacrylic acid"
Journal of Physics: Condensed Matter, (2021) 33(17), 174004. DOI: 10.1088/1361-648X/abe1ec

Nicole Zoratto, Laura Forcina, Roberto Matassa, Luciana Mosca, Giuseppe Familiari, Antonio Musarv̀s, Maurizio Mattei, Tommasina Coviello, Chiara Di Meo and Pietro Matricardi

"Hyaluronan Cholesterol Nanogels for the Enhancement of the Ocular Delivery of Therapeutics"
Pharmaceutics, (2021) 13, 1781. DOI: 10.3390/pharmaceutics13111781

Tommasina Coviello, Franco Alhaique, Chiara Di Meo, Pietro Matricardi, Elita Montanari, Nicole Zoratto, Mario Grassi, Michela Abrami

"Scleroglucan and guar gum: The synergistic effects of a new polysaccharide system"
Express Polymer Letters, (2022) 16 (4), 410-426. DOI: <https://doi.org/10.3144/expresspolymlett.2022.30>

Sabina Di Matteo, Chiara Di Meo, Guido Carpino, Nicole Zoratto, Vincenzo Cardinale, Lorenzo Nevi, Diletta Overi, Daniele Costantini, Claudio Pinto, Elita Montanari, Marco Marzoni, Luca Maroni, Antonio Benedetti, Marco Viola, Tommasina Coviello, Pietro Matricardi, Eugenio Gaudio, Domenico Alvaro

"Therapeutic Effects of Dexamethasone-Loaded Hyaluronan Nanogels in the Experimental Cholestasis"
Drug Delivery and Translational Research, (2022) 12, 1959-1973. DOI: <https://doi.org/10.1007/s13346-022-01132-7>

Rosa Calderon Jacinto, Pietro Matricardi, Virginie Gueguen, Graciela Pavon Djavid, Emmanuel Pauthe, Violeta Rodriguez Ruiz

"Dual Nanostructured Lipid Carriers/Hydrogel System for Delivery of Curcumin for Topical Skin Applications"
Biomolecules, (2022) 12, 780. DOI: <https://doi.org/10.3390/biom12060780>

Marco Viola, Claudia Migliorini, Pietro Matricardi, Chiara Di Meo

"Synthesis and characterization of a novel amphiphilic polyacrylate-cholesterol derivative as promising material for pharmaceutical and cosmetic applications"
European Polymer Journal, (2023) 184, 111774. DOI: <https://doi.org/10.1016/j.eurpolymj.2022.111774>

Pauline Marie Chichiricco, Pietro Matricardi, Bruno Colao, Pedro Gomes, Christine Jerome, Julie Lesoeur, JoV'Ille Veziers, Gildas Rethore, PierreWeiss, Xavier Struillou and Catherine Le Visage

"Injectable Hydrogel Membrane for Guided Bone Regeneration"
Bioengineering, 2023, 10, 94. DOI: <https://doi.org/10.3390/bioengineering10010094>
IF (2023) = 5.046

L. Paoletti, N. Zoratto, M. Benvenuto, D. Nardozi, V. Angiolini, P. Mancini, L. Masuelli, R. Bei, G.V. Frajese, P. Matricardi, M. Nalli, C. Di Meo

"Hyaluronan-estradiol nanogels as potential drug carriers to target ER+ breast cancer cell line"
Carbohydrate Polymers, 314 (2023) 120900. DOI: <https://doi.org/10.1016/j.carbpol.2023.120900>

Marco Viola, Claudia Migliorini, Fabio Ziarelli, Stephane Viel, Claudia Cencetti, Daniel Di Risola, Luciana Mosca, Laura Masuelli, Pietro Matricardi, Chiara Di Meo,

"Polyacrylate-Cholesterol Amphiphilic Derivative: Formulation. Development and Scale-up for Health Care Applications"
Journal Functional Biomaterials, 2023, 14, 482. DOI: <https://doi.org/10.3390/jfb14090482>

Ju Wang, Marco Viola, Claudia Migliorini, Luca Paoletti, Silvia Arpicco, Chiara Di Meo, Pietro Matricardi

"Polysaccharide-Based Nanogels to Overcome Mucus, Skin, Cornea, and Blood-Brain Barriers: A Review"
Pharmaceutics, 2023, 15, 2508. DOI: <https://doi.org/10.3390/pharmaceutics15102508>

Luca Paoletti, Francesco Baschieri, Claudia Migliorini, Chiara Di Meo, Olivier Monasson, Elisa Peroni, Pietro Matricardi*

"3D printing of gellan-dextran methacrylate IPNs in glycerol and their bioadhesion by RGD derivatives"
Journal of Biomedical Materials Research: Part A, 2024, 1-17. DOI:10.1002/jbm.a.37698

Fernanda R. Veregue, Liszt Y.C. Madruga, Ketul C. Papat, Fernanda A. Rosa, Eduardo Radovanovic, Pietro Matricardi, Matt J. Kipper, Alessandro F. Martins

"Enhancing biological properties with straightforward deposition of durable heparin/chitosan surface coatings on wetttable poly(ϵ -caprolactone)/Tween-20 electrospun fibers"
Surfaces and Interfaces, 2024, 46, 104149. DOI: <https://doi.org/10.1016/j.surfin.2024.104149>

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