

INFORMAZIONI PERSONALI **Assunta Borzacchiello**CURRENT POSITION  
(2007 – Today)

Senior Research Scientist at Institute of Polymers, Composite and Biomaterials of National Research Council (IPCB-CNR)  
Level: Second Level Researcher  
Serial Number: 8880

## PROFESSIONALEXPERIENCE

2001 - 2007

**Researcher**

Institute of Polymers, Composite and Biomaterials of National Research Council (IPCB-CNR), Naples  
*Level III*

## EDUCATION AND TRAINING

1995 -1998

**PhD in Technology of materials and Industrial Implants**

University of Naples "Federico II"

Thesis Title: "Modellation and optimization of materials properties for biomedical applications"

Tutors: Ing. L. Ambrosio, Prof. L. Nicolais

1989 - 1994

**Master degree with honors in Chemical Engineering"**

University of Naples "Federico II"

Thesis Title: "Novel polymeric based materials for biomedical applications"

Tutor: Ing. Prof. L. Nicolais

MAIN TASKS AND  
RESPONSABILITIESINSTITUTIONAL  
RESPONSIBILITIES

2016 – today Responsible for laboratory security at Institute for Polymers, Composites and Biomaterials-National Research Council (IPCB-CNR) uos Na/Portici, Mostra d'Oltremare Pad.20 Viale Kennedy 54, 80125 Napoli

2014 – today Responsible for the security of Rheology Laboratory at Institute for Polymers, Composites and Biomaterials-National Research Council (IPCB-CNR)

2009- 2019 Membro del consiglio di Istituto (IPCB- CNR)

2009 – 2013 Responsible for security of Chemical-physical Laboratory at Department of Materials and Production Engineering of University of Naples Federico II

2009 – 2013 Responsible for security of Biomaterials and Tissue Engineering Laboratory at Department of Materials and Production Engineering of University of Naples Federico II

2004 – 2013 Responsible for the management of the experimental apparatus: Rheometer GEMINI, (Malvern UK) at research center CRIB of University of Naples

Federico II

SCIENTIFIC MANAGER OF  
RESEARCH PROJECTS

1. Scientific Responsible of IPCB-CNR Unit of the FISR project: "La refrigerazione a stato solido: una soluzione per un investimento eco-compatibile SUSSTAINEBLE"
  2. WP leader of ADVISE POR Campania FESR 2014/2020 project number: B43D18000240007 2019-2021 ADVISE).
  3. MIUR-PON ARS01\_01081 INMBIOMED (total budget: 6.375.080,00),
  4. Scientific responsible of the research project: "Idrogeli nanocompositi innovativi a base di seta di origine vegetale e nanometalli con proprietà battericide ed anticancro" finanziato dal Ministero degli Affari Esteri e della Cooperazione Internazionale nell'ambito del Programma esecutivo di cooperazione scientifica e tecnologica tra Italia ed Egitto, progetto STDF25925 e Istituto per i Polimeri Compositi e Biomateriali del CNR. Identificativo Progetto MAECI: PGR00788 Period 2017/2018
  5. Scientific responsible of the research project: "Hyaluronic acid for simultaneously viscosupplementation and drug delivery" in collaboration between IPCB- CNR e ALTERGON ITALIA s.r.l. June 2017.
  6. Scientific responsible of the research project: "Idrogeli innovativi compositi ed iniettabili per l'ingegnerizzazione del tessuto cartilagineo" as part of the bilateral Protocol of Scientific and Technological Cooperation between Italy and Quebec, relating to a joint research between IPCB-CNR and McGill University, Department of Materials Engineering. Project Code: Q17MO05 Periodo di attività 2017/2019
  7. Scientific Responsible of the project: "Rigenerazione del tessuto polmonare nel neonato prematuro con broncodisplasia" as part of the operational conventions relating to the agreement between IPCB-CNR and "Villa Betania" Evangelical Hospital Prot. ICTP-CNR-IPCB 0001654 05/05/2015 Periodo di attività: dal 01.04.2016 al 30.03.2018 Finanziamento: 50000 euro
  8. Scientific Responsible of the project: "Novel plant silk/multiple nano-metals hydrogels with bactericidal and anticancer applications" as part of the bilateral projects of Great Relevance included in the Executive Protocol of Scientific and Technological Cooperation Italy-Egypt for the years 2016-2018. Foudning 20.000 €/year Period of activity: 2016-2018
  9. Scientific Responsible for IPCB-CNR of the project: "INnovative Life sClence Phd Programme in South Italy-INCIPIT" CONFUND project (grant agreement n. 665403) co-funded by HORIZON 2020/Marie Sklodowska Curie Action. Amount per operating unit IPCB-UOS(€):200.340,00 Period of activity: 01.01.2016-31.12.2020 Project sheet: [http://cordis.europa.eu/project/rcn/196974\\_en.html](http://cordis.europa.eu/project/rcn/196974_en.html)
  10. Scientific Responsible of the project: "Synthesis and characterization of natural polymers based nanogels for stabilization and controlled release of recombinant human Nerve Growth Factor (rhNGF)", in collaboration with Dompe' farmaceutici Italia. Period of activity: 11/2015-10/2016. Total amount of founding: 40.000,00 €. IPCB protocol: n°0003898 del 25.11.2015
  11. Physical-chemical and rheological characterization of new ophthalmic delivery systems" with MEDIVIS. Amount of founding: 7.000,00 €.
  12. PON01\_00074 - Dispositivi ad alto contenuto tecnologico per il settore biomedicale – DIATEME, financed by MIUR – PON 2007-2013. Amount of founding: 289.863,11 €. Period of activity: 2011-2014
  13. Rheological properties of artificial tears with Bausch and Lomb, IOM S.p.A., Italy, Amount of founding: 12.000,00. Period of activity: 2011-2012
  14. Evaluation of fermentation derived polymers at micro and macro scale for biomedical and pharma application with Novozymes Biopharma A/S, Denmark, Amount of founding (€): 45.000,00 €. Period of activity: 2011-2013
- PARTICIPATION TO  
SCIENTIFIC PROJECTS
1. Participation to the Research Project: "PON02\_00029\_3203241-POLIFARMA-Sistemi polimerici MICRO e NANO-particellari per la somministrazione di molecole farmacologicamente attive". Total amount of founding (€): 3.000.000,00. Period of activity: 01/07/2012-30/06/2015.
  2. Participation to the Research Project: "MI01\_00062 - BAS-Sviluppo di innovative strutture superassorbenti a basso impatto ambientale destinate ad applicazioni igienico-sanitarie per il benessere, la salute e la cura della persona" Unit Responsible: Luigi Ambrosio, Funding source: MISE - Industria 2015-Bando Made in Italy, Amount of founding: 64.341,03 €, Period of activity: 01/07/2010-30/06/2013.
  3. Participation to the Research Project: "RBNE08HM7T\_001 - Iniziativa MERIT-Mezzogiorno "MEDical Research in ITaly" Unit Responsible: Luigi Ambrosio, Funding source: MIUR, Amount of founding 642.056,00 €, Period of activity 05/07/2011 al 04/07/2014.
  4. Participation to the Research Project: "POR BIOTECNOLOGIE (BERSAGLI- Bersagli, sonde e segnali in terapia diagnostica)", Period of activity 01/05/2013-31/05/2015
  5. Participation to the Research Project: "BIOCOMP-RB: nuova generazione di inflatable rigid boats realizzata in biocompositi", Period of activity 01/07/2010-31/03/2014

<p><b>SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS</b></p> <p><b>ORGANIZATION OF SCIENTIFIC MEETINGS</b></p>	<p>1996- today Tutor of 44 traineeship activities  Tutor of 12 Postdoctoral fellows and research grants  Tutor of 11 PhD fellows  Tutor of 2 Marie Curie PhD Students  Tutor of 50 Master and Bachelor degree students</p> <p>2006 Member of the organising committee of International Conference On Advances In Biomaterials For Drug Delivery And Regenerative Medicine ICAB 2006, Capri, Italy</p> <p>2005 Member of the organising committee of 19th European Conference on Biomaterials, Sorrento, Italy</p> <p>2004 Member of the organising committee of the meeting “past, present and future: traguardi e prospettive della ricerca sui biomateriali” at CRIB, Naples, Italy</p> <p>2002 Member of the organising committee of International Conference on Advances of Biomaterials for Reconstructive Medicine, Capri, Italy</p> <p>1998 Member of the organising committee of International Conference on Advances in Biomaterials and Tissue Engineering, Capri, Italy</p>
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## RESEARCH ACTIVITY

**CURRENT RESEARCH FIELDS** Research Activities of Dr Borzacchiello include Biomaterials for tissue engineering and drug delivery applications, design and characterization of biomimetic composites, self assembly polymeric materials and hydrogels for biomedical applications, structure and properties of soft connective tissues and biological fluids and relative substitute, rheology and microrheology of complex fluids such as polymeric solutions and gel. She has 3199 citations, 33 H Index and 35 i10- index. She is author of more than 90 peer-reviewed papers, 20 books chapter and she is editor of Encyclopedia of Composite published by Wiley.

H-Index: 33  
H-Index source: Scopus  
Citations: 3199  
Publications: 90

## PUBLICATIONS

1. Pota G., Vitiello G., Venezia V., Della Sala F., Borzacchiello A., Costantini A., Paduano L., Cavalcanti L.P., Tescione F., Silvestri B., Luciani G., “Shall We Tune? From Core-Shell to Cloud Type Nanostructures in Heparin/Silica Hybrids Polymers” 14 (17), 3568 2022
2. Sharma P., Kumar A., Agarwal T., Dey A.D., Moghaddam F.D., Rahimmanesh I., Ghovvati M., Yousefiasl S., Borzacchiello A., Mohammadi A., Yella V.R.; Moradi O., Sharifi E. “Nucleic acid-based therapeutics for dermal wound healing” International Journal of Biological Macromolecules 2022
3. Ghasemi K., Darroudi M., Rahimmanesh I., Ghomi M., Hassanpour M., Sharifi E., Yousefiasl S., Ahmadi S., Zarrabi A., Borzacchiello A., Rabiee M., Paiva-Santos A.C., Rabiee N., “Advances in aptamer-based drug delivery vehicles for cancer therapy” Biomaterials Advances, 213077 2022
4. Hajebi S., Yousefiasl S., Rahimmanesh I., Dahim A., Ahmadi S., Kadumudi F.B., Rahgozar N., Amani S., Kumar A., Kamrani E., Rabiee M., Borzacchiello A., Wang X., Rabiee N., Dolatshahi -Pirouz A., Makvandi P., “Genetically Engineered Viral Vectors and Organic-Based Non-Viral Nanocarriers for Drug Delivery Applications”, Advanced healthcare materials, 2201583 2022
5. Heidari, G., Hassanpour, M., Nejaddehbashi, F., Sarfjoo, M. R., Yousefiasl, **Borzacchiello, A.**, ... & Vasseghian, Y. (2022). Biosynthesized Nanomaterials with Antioxidant and Antimicrobial Properties. Materials Chemistry Horizons. Materials Chemistry Horizons 2022
6. **Borzacchiello, A.**, Pagliuca, M., Solimando, N., Nicolais, L. Synergistically cooperative compositions useful for soft tissue augmentation, drug delivery and related fields US Patent App. 17/264,134 2022

7. Della Sala, F., Longobardo, G., Fabozzi, A., di Gennaro, M., **Borzacchiello, A.** Hyaluronic acid-based wound dressing with antimicrobial properties for wound healing application. *Applied Sciences* 12 (6), 3091–3093 2022
8. Makvandi, P., Della Sala, F., di Gennaro, M., Solimando, N., Pagliuca, M., & **Borzacchiello, A.** A Hyaluronic Acid-Based Formulation with Simultaneous Local Drug Delivery and Antioxidant Ability for Active Viscosupplementation *ACS omega* 7 (12), 10039-10048 2022
9. Della Sala, F., Silvestri, T., **Borzacchiello, A.**, Mayol, L., Ambrosio, L., & Biondi, M. Hyaluronan-coated nanoparticles for active tumor targeting: Influence of polysaccharide molecular weight on cell uptake *Colloids and Surfaces B: Biointerfaces* 210, 112240–112244 2022
10. Della Sala, F., Fabozzi, A., di Gennaro, M., Nuzzo, S., Makvandi, P., Solimando, N., Pagliuca, M. & **Borzacchiello, A.** Advances in Hyaluronic-Acid-Based (Nano) Devices for Cancer Therapy *Macromolecular Bioscience* 22 (1), 2100304–2100305 2022
11. Della Sala, F., di Gennaro, M., Lista, G., Messina, F., Ambrosio, L., & **Borzacchiello, A.** Effect of Hyaluronic Acid on the Differentiation of Mesenchymal Stem Cells into Mature Type II Pneumocytes *Polymers* 13 (17), 2928–2933 2021
12. Comite, E., El-Nakhel, C., Roupael, Y., Ventrino, V., Pepe, O., **Borzacchiello, A.**, ... & Woo, S. L. Bioformulations with beneficial microbial consortia, a bioactive compound and plant biopolymers modulate sweet basil productivity, photosynthetic activity and metabolites. *Pathogens* 10 (7), 870–875 2021
13. Zampino, D., Mancuso, M., Zaccone, R., Ferreri, T., **Borzacchiello, A.** ... Thermo-mechanical, antimicrobial and biocompatible properties of PVC blends based on imidazolium ionic liquids. *Materials Science and Engineering: C* 122, 111920–111924 2021
14. Della Sala, F., Biondi, M., Guarnieri, D., **Borzacchiello, A.**, Ambrosio, L., Mayol, L., "Mechanical behavior of bioactive poly(ethylene glycol) diacrylate matrices for biomedical application, *Journal of the Mechanical Behavior of Biomedical Materials* (2020), doi: <https://doi.org/10.1016/j.jmbbm.2020.103885>
15. Makvandi, P., Wang, C. Y., Zare, E. N., **Borzacchiello, A.**, Niu, L. N., & Tay, F. R. (2020). Metal-Based Nanomaterials in Biomedical Applications: Antimicrobial Activity and Cytotoxicity Aspects. *Advanced Functional Materials*, 1910021.
16. **A. Borzacchiello**, F. Messina, F. Della Sala "Biomaterial and use thereof in the treatment of lung pathologies" International patent n ° PCT / IB2019 / 061072 (2019)
17. Makvandi, P., Ali, G. W., Della Sala, F., Abdel-Fattah, W. I., & **Borzacchiello, A.** (2020). Hyaluronic acid/corn silk extract based injectable nanocomposite: A biomimetic antibacterial scaffold for bone tissue regeneration. *Materials Science and Engineering: C*, 107, 110195.
18. Zare, E. N., Jamaledin, R., Naserzadeh, P., Afjeh-Dana, E., Ashtari, B., Hosseinzadeh, M., Vecchione, R., Wu, A., Tay, F. R., **Borzacchiello, A.**, & Makvandi, P. (2020). Metal-Based Nanostructures/PLGA Nanocomposites: Antimicrobial Activity, Cytotoxicity, and Their Biomedical Applications. *ACS applied materials & interfaces*, 12(3), 3279–3300.
19. Makvandi P, Ali GW, Della Sala F, Abdel-Fattah WI, **Borzacchiello A.** "Biosynthesis and characterization of antibacterial thermosensitive hydrogels based on corn silk extract, hyaluronic acid and nanosilver for potential wound healing." *Carbohydr Polym.* 2019 Nov 1;223:115023.
20. Mayol L, Silvestri T, Fusco S, **Borzacchiello A**, De Rosa G, Biondi M. Drug micro-carriers with a hyaluronic acid corona toward a diffusion-limited aggregation within the vitreous body. *Carbohydr Polym.* 2019 Sep 15;220:185-190.
21. Serri C, Frigione M, Ruponen M, Urtti A, **Borzacchiello A**, Biondi M, Itkonen J, Mayol L. Electron dispersive X-ray spectroscopy and degradation properties of hyaluronic acid decorated microparticles. *Colloids Surf B Biointerfaces.* 2019 Sep 1;181:896-901
22. **A. Borzacchiello**, F. Messina, F. Della Sala "Biomateriale e suo utilizzo nel trattamento di patologie Polmonari" Brevetto italiano n°102018000020722 depositato il 21/12/2018
23. Nazarzadeh Zare E, Makvandi P, **Borzacchiello A**, Tay FR, Ashtari B, V T Padil V. Antimicrobial gum bio-based nanocomposites and their industrial and biomedical applications. *Chem Commun (Camb).* 2019;55(99):14871-14885. doi:10.1039/c9cc08207g

24. Zapata-Catzin GA, Bonilla-Hernández M, Vargas-Coronado RF, Cervantes-Uc JM, Vázquez-Torres H, Hernandez-Baltazar E, Chan-Chan LH, **Borzacchiello A**, Cauch-Rodríguez JV. Effect of the rigid segment content on the properties of segmented polyurethanes conjugated with atorvastatin as chain extender. *J Mater Sci Mater Med*. 2018 Oct 24;29(11):161
  25. Makvandi P, Jamaledin R, Jabbari M, Nikfarjam N, **Borzacchiello A**. Antibacterial quaternary ammonium compounds in dental materials: A systematic review. *Dent Mater*. 2018 Jun;34(6):851-867.
  26. **A. Borzacchiello**, F. Della Sala, P. Makvandi, L. Ambrosio "Idrogeli intelligenti e sistemi autoassemblanti per applicazioni nel rilascio controllato e nella medicina rigenerativa" pubblicazione in rivista *Panta Rei* (2017) Volume 18 Codice ISBN: 978-88-904912-9-0
  27. M Fernández-Gutiérrez, S Fusco, L Mayol, J San Román, **A Borzacchiello**, L. Ambrosio. Stimuli-responsive chitosan/poly (N-isopropylacrylamide) semi-interpenetrating polymer networks: effect of pH and temperature on their rheological and swelling properties *Journal of Materials Science: Materials in Medicine* 27, (2016)1-8
  28. S. Giarra, C. Serri, Luisa Russo, S. Zeppetelli, G. De Rosa, **A Borzacchiello**, M Biondi, L. Ambrosio, L. Mayol Spontaneous arrangement of a tumor targeting hyaluronic acid shell on irinotecan loaded PLGA nanoparticles *Carbohydrate Polymers* 140 (2016) 400–407
  29. M Biondi, **A Borzacchiello**, L Mayol, L Ambrosio, Nanoparticle-Integrated Hydrogels as Multifunctional Composite Materials for Biomedical Applications, (2015) *Gels* 1 (2), 162-178
  30. **Borzacchiello, A.**, Russo, L., Malle, B.M., Schwach-Abdellaoui, K., Ambrosio, L. Hyaluronic acid based hydrogels for regenerative medicine applications (2015) *BioMed Research International*, 2015, art. no. 871218
  31. Mayol, L., Biondi, M., Russo L., Malle, B. M., Schwach-Abdellaoui, K, **Borzacchiello, A.** Amphiphilic hyaluronic acid derivatives toward the design of micelles for the sustained delivery of hydrophobic drugs. *Carbohydrate Polymers* 102 (2014) 110–116.
  32. Mayol, L., Borzacchiello, A., Guarino, V., Serri, C., Biondi, M., Ambrosio, L. Design of electrosprayed non-spherical poly (l-lactide-co-glicolide) microdevices for sustained drug delivery (2013) *Journal of Materials Science: Materials in Medicine* (2014), 25(2), 383-390
  33. Dessi, M., **Borzacchiello, A.**, Mohamed, T.H.A., Abdel-Fattah, W.I., Ambrosio, L. Novel biomimetic thermosensitive  $\beta$ -tricalcium phosphate/chitosan-based hydrogels for bone tissue engineering. *Journal of Biomedical Materials Research - Part A* 2013, 101 (10), pp. 2984-2993.
  34. Gloria, A., **Borzacchiello, A.**, Causa, F., Ambrosio, L. Rheological characterization of hyaluronic acid derivatives as injectable materials toward nucleus pulposus regeneration. *Journal of Biomaterials Applications* 2012, 26 (6), pp. 745-759.
- BOOK CHAPTERS**
1. V. Guarino, R. Altobelli, F. Della Sala, **A. Borzacchiello**, L. Ambrosio. Alginate Processing Routes to Fabricate Bioinspired Platforms for Tissue Engineering and Drug Delivery in Alginates and Their Biomedical Applications, B.H.A. Rehm, M.F. Moradali (eds.), Part of the Springer Series in Biomaterials Science and Engineering book series (SSBSE, volume 11) p. p. 101–120, (2017). ISBN: 9789811069109, doi:10.1007/978-981-10-6910-9\_4
  2. **A. Borzacchiello**, F. Della Sala, L.A. Ambrosio, Rheometry of polymeric biomaterials, *Characterization of Polymeric Biomaterials*, Edited by Maria Cristina Tanzi, Silvia Fare, 2017. ISBN: 9780081007372
  3. **Borzacchiello A.**, L. Russo, L. Ambrosio, Hyaluronic acid based hydrogels at micro and macro scale, *Natural Biomaterials for Advanced Devices and Therapies* Wiley book edited by Rui Reis and Numo Neves 2016 Wiley and Sons.
  4. **Borzacchiello A.**, Russo, Zaccaria e Ambrosio L., Physical and Chemical Hyaluronic acid hydrogels and their biomedical applications, in *Polysaccharides Hydrogels* ed. Matricardi, Alhaique, Coviello 2016.
  5. Russo, Zaccaria, Maria Autiello and **Borzacchiello A.**, Hydrogels for biomedical applications, *BIOMEDICAL COMPOSITES: Materials, Manufacturing and Engineering* by J. Paulo Davim, Chapter 8, 2014.
  6. L. Russo, M. A. Autiello, B. M. Malle, K. Schwach-Abdellaoui, **Borzacchiello, A.**, Hyaluronic acid: regenerative medicine and drug delivery, the *Encyclopedia of Biomedical Polymers and Polymeric Biomaterials*, Ed. Taylor and Francis, published 27 gennaio 2016, ISBN: 1-4398-9879-0.

7. **Borzacchiello A.**, Autiello, Russo, Nicolais. Novel biomimetic design for composite materials, Wiley Encyclopedia of Composites (2nd Edition) (2012), 3, 2016-2023.
8. **Borzacchiello A.**, Gloria, De Santis and Ambrosio, Spinal disc implants using hydrogels in Biomedical hydrogels: Biochemistry, manufacture and medical applications, pag. 103-114, 2011, Rimmer Steve (Ed), Publisher Woodhead Publishing.
9. **Borzacchiello A.**, Ambrosio, Structure-Properties Relationships in Hydrogels In Hydrogels: Biological Properties and Applications, Barbucci, Rolando (Ed.) pag 9-21, 2009, Publisher Springer.
10. L. Mayol, **Borzacchiello A.**, F. Quaglia, M.I. LaRotonda L. Ambrosio, Effect of Hyaluronic Acid on the Self Assembling Behaviour of PEO-PPO Copolymers in Aqueous Solution; in American Institute of Physics Conf. Proc. -- July 7, 2008 Volume 1027, pp. 570-572 The XV International Congress on Rheology, edited by A. Co, L. G. Leal, R. H. Colby and A. J. Giacommi, 2008 published by Springer
11. **Borzacchiello A.**, L. Ambrosio, P.A. Netti, L. Nicolais, "Rheology of biological fluids and their substitute". In Tissue Engineering and Novel Drug Delivery Systems, ( M.J. Yaszemski, D.J. Trantolo, K.U. Lewandroski, V. Hasirci, D.E. Altobelli, D.L. Wise, Editors), Marcel Dekker Inc, 2004 New York, 265-280.
12. **Borzacchiello A.**, L. Ambrosio, P.A. Netti, L. Nicolais, Effect of chemical modification on the viscoelastic properties of Hyaluronic acid, Eurorheo 2002-01, Torremolinos, Spain, April 2002, Publication on "Progress in Rheology Theory and Application" pp. 381-383.
13. **Borzacchiello A.**, Le tecnologie di trasformazione in La Gestione dell'Innovazione di Prodotto: Il Caso delle Calzature e degli Imballaggi Flessibili. (P. Stampacchia & L. Nicolais, eds.), Edizioni Scientifiche Italiane, pp.657-664, 2001.
14. **Borzacchiello A.**, L. Ambrosio, L. Nicolais, D. Ronca, G. Guida, The temperature at the bone – cement interface: modelling and in vitro analysis in Bone cement and cemented fixation of implants, ed. F. Pipino, (2001), Zenit, VR pp. 135-140
15. M. Giordano, **Borzacchiello A.**, L. Nicolais, "Pultrusion and other shaping processes" Editor(s): Akovali, Gueneri. Handbook of Composite Fabrication (2001), 127-162. Publisher: Rapra Technology Ltd., Shrewsbury, UK
16. **Borzacchiello A.**, P.A. Netti, L. Ambrosio, L. Nicolais, "Viscoelastic Properties of Vitreous Body: Role of Hyaluronic Acid", XIII International Congress On Rheology, Cambridge, UK, August, 2000, Publication on "Proceedings of the XIIIth International Congress on Rheology", Editor(s): David M. Binding, pp. 4-365-367
17. **Borzacchiello A.**, L. Ambrosio, L. Nicolais, P.A. Netti, "Rheology of Polysaccharide Solutions: Role of the Draining Flow", XIII International Congress On Rheology, Cambridge, UK, August, 2000, Publication on "Proceedings of the XIIIth International Congress on Rheology", Editor(s): Binding, David M. pp. 1-363-364.
18. **Borzacchiello A.**, D. Ferrante, A. Rossi, "Chimica e Tecnologie Chimiche", di A. Borzacchiello: Introduzione; Parte I, capp. 2, 3, 4, 5, 6, 7; Parte II, cap. 5; Parte III, capp. 2, 4; Appendice; Ed. Simone, Napoli, 1999. Editore: Edizioni Giuridiche Simone; Collana: Concorsi a cattedre; Data di Pubblicazione: 1999
19. **Borzacchiello A.**, L. Ambrosio, L. Nicolais, E.J. Harper, K.E. Tanner, W. Bonfield, "Polymerization behaviour of a new composite bone cement: "Modelling and in vitro analysis", 8th European Conference on Composite Materials ECCM-8, Naples, Italy, June 3-6, 1998, publication on Editor(s): Crivelli Visconti I., ECCM-8, European Conference on Composite Materials: Science, Technologies and Applications, Vol. 1, p. 379-386, 1998, Publisher: Woodhead, Cambridge, UK.

## ULTERIORI INFORMAZIONI

### AWARDS AND FELLOWSHIPS

1991 Award for academic merit received from "Enichem"  
 1996 Visiting scientist at Interdisciplinary Research Centre (IRC) in Biomedical Materials Queen Mary and Westfield College University of London (supervisor prof W. Bonfield)  
 1997 Visiting scientist at Institute of Materials Science University of Connecticut Storrs, CT, USA, (supervisor Prof. Samuel J. Huang, Professor of Chemistry and Material Science).  
 1998 Award for the best scientific communication received from C.I.B.E during national congress S.I.B.O.T (Isola d'Elba 12-13 June 98)  
 2011 Best poster award: « UV-photocrosslinked poly(N-vinyl-2-pyrrolidone) hydrogels: Structure-properties relationship », Borzacchiello, S. Fusco, G D'Errico, L. Ambrosio, congress: Advances in Polymer based Materials and Related Technologies, Capri (Naples), 29 May-1 June 2011

### TEACHING ACTIVITY

2014-2020 Scientific Enabler II band sector 09 / D1 Materials science and technology.

2002 – 2011 Professor of Biomaterials, Bachelor degree in Biomedical Engineering, University of Naples, Federico II, Italy

2008 Professor in “Rheological characterization” in the context of project TRIPODE DM 20160, IMAST

2007 Professor in “Rheology of polymers” in the context of project “Researcher in polymeric and composites materials engineering”, IMAST

2004 Professor in “Rheological properties of materials” in the context of project “Project assistant for research and development in the field of integrated design of aircraft” PROVEL, PON 2000-2006, Alenia Aeronautica Spa., Napoli.

2004 Professor in “Rheological properties of polimeric materials” in the context of “Design and manufacture of novel injection systems and hot runner” (INCOD S. Polo di Piave (TV))

2003 – 2004 Professor in “Rheological properties of polimeric materials” in the context of project “Design of smart systems for the monitoring and control of the safety of aeronautical structures” SMART PON 2000-2006, Research center CIRA.

2001 – 2003 Teaching assistant of Transport Phenomena, Bachelor degree in Materials Science and Engineering, University of Naples, Federico II, Italy.

2000 - 2001 Seminar about “Experimental and analytic methods for the characterization of polymeric solutions”, in the context of course “Thermodynamic and Transport Properties”, Bachelor degree in Materials Engineering, University of Naples, Federico II, Italy.

1998 – 2001 Seminar about “Synthesis, characterization, modellation and optimization of polymeric materials properties”, in the context of course “Biomaterials”, Bachelor degree in Materials Engineering, University of Naples, Federico II, Italy.

2006-2013 Member of 25 selection committees for final exam in (Bachelor and Master) Biomedical Engineering of University of Naples Federico II

LESSONS ON INVITATION

2016 Lesson entitled: Smart Hydrogels And Nanoparticulate Systems For Drug Delivery and Regenerative Medicine Applications, "in the context of the ICB Conference 3, 28-30 September 2016, Catania

2016 Lesson entitled "Hydrogels for tissue engineering application" in the course of Ingenieria de Tejido y liberacion controlada de farmacos course, Merida, Mexico April 13-15, 2016.

2016 Lesson entitled "Natural and synthetic micro and nano hydrogel carriers for controlled drug delivery" in the course of Ingenieria de Tejido y liberacion controlada de farmacos course, Merida 13-15 April 2016.

2012 Lesson titled "Hyaluronic Acid and its derivatives at micro and macro scale for biomedical applications" held on June 14, 2012 in Copenhagen, Denmark at Novozymes Biopharma DK A/S

2009 Lesson entitled "Rheological Behavior of Natural and Synthetic Hydrogels" at the I Marie Curie Cutting Edge InVENTS Practical Training Course on "Polymer Chemistry and Controlled Drug Delivery" from 18 to 28 June 2009 in Madrid, Spain.

2006 Lesson entitled "Rheological characterization of hydrogels" held at the Institute of Polymers Science and Technology (CSIC) in Madrid, Spain on 16 October 2006 at the invitation of prof. Julio San Roman del Barrio.

2003 Lesson entitled "Characterization of injectable hydrogel composites for orthopedic applications" at the II International Conference on New Biomedical Materials held on 5-8 April 2003 in Cardiff (UK).

2000 Lesson titled "Material Biology: Evolutionary Scenarios in the Field of Materials Engineering" at the Biomaterial Day organized by Prof. Tamburro at the University of Basilicata. February 2000.

PRESENTATIONS AT NATIONAL AND INTERNATIONAL CONGRESSES

A. Borzacchiello, F. Della Sala, P. Makvandi, L. Ambrosio “Injectable thermosensitive polysaccharide-based hydrogels for regenerative medicine” The Fiftieth Anniversary of the Institute for Polymers Composites and Biomaterials. Current Research Activity, 2019, p. 31, ISBN versione cartacea: 9788880803652, ISBN versione elettronica:9788880803669

1.Borzacchiello, F. Della Sala, T. Silvestri, L. Mayol, M. Biondi, L. Ambrosio “Molecular weight influence on cell internalization kinetics of amphiphilic biodegradable nanoparticles decorated with hyaluronic acid.” 30th European Conference on Biomaterials ESB 2019 Dresden, 9–13 Settembre 2019

2.Makvandi P, Ali GW, Della Sala F, Abdel-Fattah WI, Borzacchiello A, Ambrosio L. “Corn silk extract and hyaluronic acid based antibacterial thermosensitive hydrogels: biosynthesis, characterization and wound healing potential.” 30th European Conference on Biomaterials ESB 2019 Dresden, 9–13 Settembre 2019

3.Makvandi P, Ali GW, Della Sala F, Abdel-Fattah WI, Borzacchiello A, Ambrosio L. “Antibacterial injectable bionanocomposite containing green synthesized silver nanoparticles for bone tissue engineering 30th European Conference on Biomaterials ESB 2019 Dresden, 9–13 Settembre 2019

4.Borzacchiello, F. Della Sala, A. Colamarino, L. Mayol, M. Biondi, L. Ambrosio “Biodegradable nanoparticles for active tumor targeting: hyaluronic acid decoration to promote cell internalization” 29th

- European Conference on Biomaterials ESB 2018 Maastricht, 9–13 Settembre 2018
5. Borzacchiello A., Della Sala F., Ambrosio L., "Hyaluronic Acid decorated Biodegradable Nanoparticles for tumor Targeting" (28th European Conference on Biomaterials, Athens, Greece, 4th-8th September 2017)
6. Borzacchiello A., Della Sala F., Ambrosio L., "Injectable hydrogel based on a novel amphiphilic hyaluronic acid derivated for controlled delivery of hydrophobic drugs" (28th European Conference on Biomaterials, Athens, Greece, 4th-8th September 2017)
7. Borzacchiello A., Della Sala F., Messina F., Nicolais L., Ambrosio L., "Potential of MSC cells cultured in polymeric scaffolds for lung tissue regeneration in preterm with bronchopulmonary dysplasia" (XXII National Congress SIN Napoli, 12-15 ottobre 2016)
8. Carla Serri<sup>1</sup>, Simona Giarra<sup>2</sup>, Assunta Borzacchiello, Giuseppe De Rosa, Marco Biondi, Laura Mayol, Luigi Ambrosio Spontaneous Arrangement of Hyaluronic Acid on PLGA based Nanoparticles for Liver Tumor Targeting, World Biomaterial conference, Montreal Canada, May 2016
9. A. Borzacchiello, A. Salis, L. Medda, M. Monduzzi, G. D'Errico, L. Paduano and L. Ambrosio. Injectable composite hydrogels containing mesoporous silica nanoparticles for controlled release of chemotherapeutics World Biomaterial conference, Montreal, Canada, May 2016
10. A. Borzacchiello, F.S. Palumbo, S. Agnello, G. Pitarresi, G. Giammona and L. Ambrosio Novel amphiphilic hyaluronic acid derivatives as injectable hydrogels for controlled drug World Biomaterial conference, Montreal, Canada, May 2016
11. A. Borzacchiello, Luisa Russo, Laura Mayol, Marco Biondi, Carla Serri, Luigi Ambrosio. Biodegradable nanoparticles coated with hyaluronic acid for controlled drug delivery in cancer therapy, Convegno Internazionale ISHAS Firenze, Italy 2015
12. L. Russo, B. M. Malle, K. Schwach-Abdellaoui, A. Borzacchiello, Viscoelastic properties of novel bacillus-derived hyaluronic acid hydrogels for osteoarthritis treatment, Convegno Internazionale ISHAS Firenze, Italy 2015
13. L. Russo, L. Mayol, M. Biondi, B. M. Malle, K. Schwach-Abdellaoui, A. Borzacchiello Novel amphiphilic ha derivative as potential candidate for solubilizing and controlling hydrophobic drug release Convegno Internazionale ISHAS Firenze, Italy 2015
14. A. Borzacchiello, L. Russo, A. Salis, L. Medda, M. Monduzzi, G. D'Errico, L. Paduano, and L. Ambrosio, Injectable platforms containing functionalised mesoporous silica nanoparticles for controlled release of chemotherapeutics, 27th European Conference on Biomaterials, Krakow, Poland, 30th August – 3rd September 2015
15. A. Borzacchiello, Russo L., S. Palumbo, S. Agnello, G. Pitarresi, G. Giammona, and L. Ambrosio. Injectable hydrogel based on a novel amphiphilic hyaluronic acid derivative for controlled delivery of hydrophobic drugs, 27th European Conference on Biomaterials, Krakow, Poland, 30th August – 3rd September 2015
16. A. Borzacchiello, Laura Mayol, Marco Biondi, Luisa Russo, Carla Serri, Luigi Ambrosio. Nanoparticelle biodegradabili ricoperte con acido ialuronico per il rilascio di farmaci controllato e sostenuto ai tumori, Congresso SIB 2104, Palermo 2-4 Luglio 2014
17. Borzacchiello, Luisa Russo, Laura Mayol, Luigi Ambrosio. Ingegnerizzazione di gel termosensibili per il rilascio controllato di farmaci, Congresso SIB 2104, Palermo 2-4 Luglio 2014
18. A. Borzacchiello, Luisa Russo, Birgitte M. Malle, Sara Poulsen, Luigi Ambrosio, Ottimizzazione di prodotti a base di albumina derivata da fermentazione come sistemi bioadesivi, Congresso SIB 2104, Palermo 2-4 Luglio 2014
19. Mayol, M Biondi, L Russo, C Serri, A Borzacchiello, L Ambrosio, Biodegradable nanoparticles coated with hyaluronic acid for targeted and sustained drug delivery to tumors 26th European Conference on Biomaterials, Liverpool, 31st August – 3rd September 2014
20. A. Borzacchiello, L Russo, B M. Malle, S Poulsen, L Ambrosio, Optimizing properties of bioadhesive systems using fermentation derived human albumin, 26th European Conference on Biomaterials, Liverpool, 31st August – 3rd September 2014
21. L. Mayol, M. Biondi, C. Serri, L. Russo, A. Borzacchiello, L. Ambrosio, M. I. La Rotonda, Hyaluronic Acid-coated biodegradable nanoparticles for tumor targeting, XXV Symposium of the European society for biomaterials, 8-12 September 2013, Madrid (SPAIN)
22. A. Borzacchiello, L. Mayol, M. Biondi, L. Russo, B. M. Malle, K. Schwach-abdellaoui, J. Roubroeks, Novel amphiphilic HA derivatives : potential solubilizing and controlling the hydrophobic drug release, XXV Symposium of the European society for biomaterials, 8-12 September 2013, Madrid (SPAIN)
23. A. Borzacchiello, L. Mayol, M. Biondi, C. Serri, L. Russo, L. Ambrosio, Biodegradable nanoparticles



coated by hyaluronic acid for delivery of chemotherapeutic drug, 4th China-Europe Symposium on biomaterials in regenerative medicine, Sorrento, Italy 1-4 July 2013.

24. A. Borzacchiello, L. Mayol, M. Biondi, L. Russo, J. Roubroeks, M. Malle, K. Schwach-abdellaoui, L. Ambrosio, Novel amphiphilic HA derivatives for hydrophobic drug delivery, 4th China-Europe Symposium on biomaterials in regenerative medicine, Sorrento, Italy 1-4 July 2013

**COMMISSIONS OF TRUST Examination commissions** Chair of 30 Examination Commissions for Biomaterials, Biomaterials I and Biomaterials II Degree Course in Biomedical Engineering - University of Naples Federico II  
**Graduate examination commissions** Member of the 60 Selection Committee for the Degree in Materials Engineering, Chemical Engineering, Biomedical Engineering for three years and specialist

**Evaluation Commissions**

1. Auditor for the Ministry of Education, University and Research within three projects for the 2003 Call for Proposals, three projects for Prin 2004, five projects for the Prin 2007.
2. Auditor for the Ministry of Education, University and Research as part of the evaluation of a research proposal for the first two evaluation phases scheduled for the 2012 Call for Proposals and three research proposals for the first phase evaluation of the Future Call in Search 2013.
3. Auditor belonging to the Experts Committee for Research Evaluation Committee (CIVR) for the Ministry of Education, University and Research for the year 2005.
4. Component and Chair of numerous Judging Commissions for research grants, for qualifications and examinations, for the 1st place of Category D economic position D / 1-Technical Area, Technical-Scientific and Data Processing, to be allocated to the Department of Engineering Mechanics, reserved for the staff of the Sub-Fund in service at the University of Salerno.

**Editor** "Wiley Encyclopedia of composites (II edition)". 2006–2012

**Referee** for Journal of applied biomaterials & biomechanics (Journal of applied biomaterials & functional materials), Journal of Biomedical Materials Research: Part A, Food Hydrocolloids, Biomacromolecules, Acta Biomaterialia, Journal of Materials Science: Materials in Medicine, Materials Science and Engineering C, Osteoarthritis and Cartilage, European Polymer Journal, Carbohydrate Polymers

**Project referee** for Italian Ministry of education, research and university (MIUR), PRIN 2003, 2004, 2007, 2012

**SCIENTIFIC SOCIETIES MEMBERSHIP** 2001–today Member of Società italiana dei Biomateriali (SIB), Member of Società italiana di Reologia (SIR), Member of European Society of Biomaterials (ESB)

**MAIN COLLABORATIONS** Industrial collaboration: Novozymes Biopharma, Bausch and Lomb, Merz, Medivis  
University collaboration: Prof. Julio San Roman, Prof. Kirkpatrick, Prof. Wafa Abdel-Fattah, Prof. Liz Tanner, Prof. S.J. Huang, Prof. J. V. C. Rodriguez, Prof. Luigi Paduano, Prof. Gerardino D'Errico, Prof. Maura Monduzzi, Prof. Paolo Netti.

**Dati personali** Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali".