Monica SANDRI Ph.D.

Personal data

Birthday: December 07th 1975
Birthplace: Forlì (Italy)
Nationality: Italian
Mobile phone: +39 347 7787605
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Current Position

January 2007 to present:
Researcher at the Institute of Science and Technology for Ceramics - National Research Council of Italy (ISTEC-CNR)
Address: Via Granarolo 64, 48018 - Faenza (RA) Italy
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Home page: www.istec.cnr.it

Education

May 2006
PhD in Chemical Science – University of Bologna, Department of Chemistry G. Ciamician, Italy

January 2003
National qualification to pursue professional works as Chemist at the University of Bologna, Department of Chemistry G. Ciamician

December 2001
M.Sc. in Pure Chemistry (109/110) - University of Bologna, Department of Chemistry G. Ciamician, Italy

Professional experience

From November 2019 to present: **Lead Researcher (II Level)** at the Institute of Science and Technology for Ceramics - National Research Council of Italy (ISTEC-CNR), Prot. ISTEC-CNR N. 0002154/2019 (21/10/2019)
June 2018: Qualification as Lead Researcher (II Level) at the Institute of Science and Technology for Ceramics - National Research Council of Italy (ISTEC-CNR), at the *ninth position* of the ranking. BANDO N. 367.185 PR - AREA STRATEGICA MATERIALI AVANZATI Prot. AMMCEN N. 0042243/2018 (14/06/2018)

From March 2016 to present: Member of ***Collegio di Dottorato dell'Università di Parma*** per il Corso di Dottorato di Ricerca in "Scienza e Tecnologia dei Materiali" Prot. ISTEC-CNR N. 0000802 (28/04/2017)

From January 2014 to present: **Permanent Researcher (III Level)** at the Institute of Science and Technology for Ceramics - National Research Council of Italy (ISTEC-CNR) prot. CNR-ISTEC N. 0000001 (02/01/2014)

From January 2007 to December 2013: **Researcher** (T.D.) at the Institute of Science and Technology for Ceramics - National Research Council of Italy (ISTEC-CNR) prot. ISTEC-CNR N. 0000057 (18/01/2007), N. 0062622 (02/09/2008), N. 0031883 (14/04/2009), N. 0018316 (03/03/2010), N. 0020348 (04/03/2011), N. 0058039 (03/08/2011), N. 0008006 (09/02/2012), prot. AMMCEN N. 0013160 (06/03/2013)

March 2002 to December 2006: Fellow Researcher at the Institute of Science and Technology for Ceramics - National Research Council of Italy (ISTEC-CNR) Prot. ISTEC-CNR N. 0000210 (15/05/2007)

Scientific responsibilities:
From December 2015 to present: Scientific Responsible of CNR Project ***DCM.AD003.012 Development of ceramics and hybrids porous materials for neurosurgery and orthopedics*** at ISTEC-CNR of Italy (verificabile sul portale CNR, SIGLA http://contab.cnr.it/)

January 2010 to December 2015: Scientific Responsible of the Research Line ***ME.P06.018.001 Biomineralization processes and development of nanostructured functionalized bio-hybrid composites for the regenerative medicine*** at ISTEC-CNR of Italy. (verificabile sul portale SIGLA http://contab.cnr.it/)

From December 2016 to 2018: Scientific Responsible of CNR Research Project ***DCM.AD001.223 INTERCOS - Formulazioni innovative per gli ambiti cosmetico, sun-care e make-up*** at ISTEC-CNR of Italy. (verificabile sul portale SIGLA http://contab.cnr.it/)

2008 to present: Scientific Responsible of the **Laboratory of Synthesis of Biomaterials** at ISTEC-CNR of Italy Prot. ISTEC-CNR N. 0000672 (30/12/2008)

2010 to 2015: Scientific responsible of the **Laboratory of Nano-Bio-Magnetism** at ISTEC-CNR of Italy Prot. ISTEC-CNR N. 0000983 (20/12/2010)

2007 to present:
Responsible of the research activity on the development of Bioceramics for Regenerative Medicine at the Department of Bioceramics and Bio-hybrid Composites of ISTEC-CNR in the following **funded European and National Research Projects**:

i. Coordinator of POR-FESR Project **MEDFil** *Filtri multifunzionali con elevate capacità di scambio di calore ed umidità (HMEf) e per l'identificazione precoce di infezioni delle vie respiratorie*. Cofinanced from Emilia-Romagna Region with European Fund for Regional Development "Bando per progetti di ricerca industriale strategica rivolti agli ambiti prioritari della Strategia di Specializzazione Intelligente, **PG/2018/631599**, **POR-FESR** 2014-2020, Asse 1, Azione 1.2.2, Ambito di specializzazione S3 - Industrie Della Salute E Del Benessere, Obiettivo strategico - Innovazione tecnologica al servizio della deospedalizzazione" (2019-2021) Total Budget: 1.117.125 €, ISTEC Budget: 575.000 €. Prot. CNR-ISTEC N. 0001414 (05/07/2019) www.medfil.it
ii. Scientific responsible in the POR-FESR Project **Mat2Rep** *Biomateriali multifunzionali per l'autoriparazione di tessuti e organi.* Cofinanced from Emilia-Romagna Region with European Fund for Regional Development "Bando per progetti di ricerca industriale strategica rivolti agli ambiti prioritari della Strategia di Specializzazione Intelligente, **PG/2018/626605, POR-FESR** 2014-2020, Asse 1, Azione 1.2.2, Ambito di specializzazione S3 - Industrie Della Salute E Del Benessere, Obiettivo strategico - Sviluppo e testing di terapie e strumenti per il "self-repair" mediante dispositivi elettromedicali e medicali, biomateriali, derivati tissutali, farmaci e prodotti combinatori" (2019-2021) Total Budget: 1.117.015,00 €, ISTEC Budget: 84.000 €. https://mat2rep.it/
iii. Task Leader in the H2020 European Project **SCREENED** *A multistage model of thyroid gland function for screening endocrine-disrupting chemicals in a biologically sex-specific manner.* "Task 5.3: Development of magnetized cells to provide control over cell spatial arrangement". Grant Agreement number: 825745 (20.10.2018) - SCREENED (2018-2023) (Call: H2020-SC1-BHC-27-2018-2020-Single-Stage-RTD New testing and screening methods to identify endocrine disrupting chemicals.) Total Project Budget 5.655.088 €, ISTEC Budget: 400.000 €. https://www.screened-project.eu/

iv. Coordinator of "Bioceramics" course financed from the National Project **PON** 10.2.5A-FSEPON-EM-2017-7 Ceram-lab, Programma Operativo Nazionale "Per la scuola competenze e ambienti per l'apprendimento" Liceo Ballardini Torricelli (2018-2019) Prot. CNR-ISTEC N. 0000187 (01/02/2019)

v. Coordinator of a Project "*Studio di processi biologically inspired per la progettazione e lo sviluppo di biomateriali nano strutturati e multifunzionali per la medicina rigenerativa"* financed from Emilia-Romagna Region in the framework of "Piano Triennale Alte Competenze per la Ricerca, il Trasferimento tecnologico e l'Imprenditorialità - **POR FSE 2014/2020**. OBIETTIVO TEMATICO 10. Fondo sociale Europeo." Budget 86.700 €. Prot. CNR-ISTEC N. 0001318 (05/06/2018)

vi. Task Manager in the European Research and Innovation Staff Exchange (RISE) Project, Call: H2020-MSCA-RISE-2014. Acronym: **VIVOIMAG** (2015-2019). Aim of the project is to develop bone implants including a new contrast agent sensitive to enzymatic activity of metaloproteases, which will permit to follow their integration with bone tissue using existing non-invasive magnetic resonance imaging techniques.

vii. Key personnel in the European Project **BIORIMA** "BIOmaterial RIsk Management". Involved n. 43 European and not European Partners. Aim of the project is to develop an Integrated Risk Management framework for Nano-Biomaterials of the latest generation used in Advanced Therapy Medicinal Products or Medical Devices. Responsibility in the research activity focused on the development of Nano-Biomaterials. Grant Agreement number: 760928-2 – BIORIMA – H2020-NMBP-2016-2017/H2020-NMBP-12-2017 RIA-two-stage (2018-2021). ISTEC Budget: 200.000 €.

viii. Scientific Responsible of the research activity of ISTEC-CNR in the H2020 European Project **CUPIDO** The research activity is focused on the development of superparamagnetic nanoparticle fully bioresorbable as carrier for drugs specific for cardiac function restoration. Grant Agreement number: 720834-2 — CUPIDO — H2020-NMBP-2016-2017/H2020-NMBP-2016 RIA-two-stage (2017-2020). Total Budget 6.094.781 €, ISTEC Budget: 580.725 €.

ix. Scientific Responsible of the research activity of ISTEC-CNR in the Regional Project **NIPROGEN** POR-FESR 2014-2020 (2016). Total budget: 999.767 €; Budget ISTEC: 320.000 €. (Prot. CNR N. 001003 of 07/04/2016)

x. Scientific Responsible of the research activity of ISTEC-CNR in the Regional Project **NANOCOATIGNS** POR-FESR 2014-2020 (2016). Budget ISTEC: 160.000 €. (Prot. CNR N. 001003 of 07/04/2016)

xi. Scientific Responsible of ISTEC-CNR in the European Project **BIO-INSPIRE.** *Marie Curie Initial Training Network (ITN) on bone regenerative therapies: Bio inspired bone regeneration.* Responsibility: Tutor of a PhD student whose activity was dedicated to the development of bio-hybrid scaffold for bone regeneration by means of biomineralization process. PITN-GA-2013-607051 (2013-2017). Project coordinator: Bouwstra J. FUJIFILM Life Science Europe.

xii. Scientific Responsible of the research activity of ISTEC-CNR of **NORCEL:** *The Norwegian Nanocellulose Technology Platform*. Research Council of Norway. Responsibility in WP4 for the research activity focused on the design and development of polymeric nanocomposites, involving cellulose nanofibrils as biocompatible reinforcing phase, for tissue regeneration. Contr.Nr.228147/O70 (2013-2018) Coordinator: Syverud K. PFI Norwegian Institute. Total budget: 3.035.000 €. ISTEC Budget: 85.500 €.

xiii. WP Leader of the Small Collaborative European Project FP7 **SMILEY**: *Smart Nano-structured Devices Hierarchically Assembled by Mineralization Processes*. Development of Biomineralization processes performed on different polymeric phases for application in EHS, Regenerative Medicine and Energy production. Project: NMP.2012.1.4-2 FP7-CP-FP 310637 (2013-2015), ISTEC-CNR Project Coord. Total budget: 3.996.000 €. ISTEC Budget: 1.417.360 €.

xiv. Scientific Responsible of the research activity of ISTEC-CNR in the National Italian Project **PRIN 2011** – 2010L9SH4K *Innovative chemical methodologies for smart biomaterials.* Development of smart biomaterials by innovative chemical methodologies allowing the bioactivation of material scaffolds of different chemical natures with biomolecules able to stimulate the desired cell response toward the regeneration of damaged tissues. (Coordinator: Nicotra F. - University of Milan-Italy). (2012-2015) Total Budget 825.600 €, ISTEC Budget 40.000 €.

xv. WP Leader in the FP7 European Project **OPHIS**: *Composite phenotypic triggers for bone and cartilage repair.* Responsibility: development of biomimetic hybrid composite for the design of multilayer scaffold for osteochondral regeneration. Project: NMP3-SL-2010-SMALL-3-246373 (2010-2014). (ISTEC-CNR Project Coordinator). [Declaration signed from the Project Coordinator Dr. Tampieri Anna]

xvi. Task Leader in the FP7 European Project **MAGISTER**: *Magnetic scaffold for in vivo tissue engineering***.** Responsibility: development of superparamagnetic biomimetic and fully biodegradable nanoparticles and hybrid composite and for bone and cartilage regeneration. Project: NMP3-LA-2008-214685 (2008-2012). [Declaration signed from the Project Coordinator Dr. Dediu Valentin Alek]

xvii. Task Leader in the FP7 European Project **TEM-PLANT:** *New Bio-ceramization processes applied to vegetable hierarchical structures.* Responsibility: development of polymeric scaffold for tendon regeneration. Project: NMP4-CT-2006-033277 (2006-2010). (ISTEC Project Coordinator). [Declaration signed from the Project Coordinator Dr. Tampieri Anna]

xviii. Scientific Responsible of the research activity for the development of hybrid scaffold for bone regeneration. FP6 European STREP Project **AUTOBONE**: *Production unit for the decentralized engineering of autologous cell-based osteoinductive bone substitutes.* Responsibility: development of hybrid nanocomposites mimicking the native bone features for tissue regeneration. (NMP3-CT-2003-505711-1 (2003-2007), ISTEC-CNR Project Coordinator). [Declaration signed from the Project Coordinator Dr. Tampieri Anna]

xix. Scientific Responsible of the research activity che ha per obiettivo lo sviluppo di dispositivi biomedici per la rigenerazione tissutale. **Progetto Premiale CNR "Personalized Medicine"** (2013-2014) Coordinated from CNR Medicine Department. ISTEC Budget 300.000 €

xx. Scientific Responsible of the research activity of ISTEC-CNR in CNR Flagship Project **"Nanomax" – miRnano** (PNR-CNR 2011-2015) *Face up Cardiac Hypertrophy via micro-RNA carried by Electrically Charged Nanoparticles* Nanomax. Total Budget 827.000 €, ISTEC Budget 225.00 €.

xxi. Scientific Responsible of the research activity for the development of implants for osteochondral regeneration in OA patients. PNR-CNR **Ageing** Program (Project of Interest) (2012-2019), ISTEC Coordinator of the Sub-Project "Regenerative Medicine in Ageing". ISTEC Budget: 685.000 €.

xxii. Scientific Responsible of the research activity for the development of innovative ceramic and hybrid devices with high nano-particles filtering capability in the research project financed form the Ministry of the Military Defence of Italy **BATNAN** (2010-2012). *Development of a filtering system for bacteria and micro- nano-powders*. (Coordinator Gatti A, UniMo).

xxiii. Scientific Responsible of the research activity for the development of reinforced graded osteochondral scaffold for osteochondral regeneration, project FIRB **Bioprotesi:** *Materiali innovativi per lo sviluppo di bio-protesi articolari* (RBIP068JL9 (2007-2012)). (ISTEC Project Coordinator). [Declaration signed from the Project Coordinator Dr. Tampieri Anna]

xxiv. Scientific Responsible of the research activity for the development of innovative tissue for cardiac tissue regeneration. Project FIRB ref. RBPR05RSM2 (2007-2010) **Tissuenet** National research network. [Declaration signed from the Project Coordinator Dr. Ambrosio Luigi]

2019-2020:
Co-chair of the 32nd edition of the International Congress **"BIOCERAMICS 32- The 32nd Symposium & Annual Meeting of the International Society for Ceramics in Medicine",** will be held in Venezia (Mestre), Italy, 20-23 October 2020.

2016 to 2018:
Scientific responsible of the R&D Contract of ISTEC-CNR with **INTERCOS S.p.A**. Research activity focused on the development of inventive long lasting make-up and sun-care products of new generation based on bio-polymers and apatitic phases. (2016-2018) Protocol ISTEC – CNR N. 0003158 del 24/10/2016. (Budget: EUR 100.000).

2010 to present:
Scientific responsible of the R&D Contract of ISTEC-CNR with **Finceramica S.p.A**. Research activity focused on the development of innovative bio-hybrid bio-mimetic scaffold, for bone and osteochondral regeneration (CO-2012-17 and Addendum of 21/03/2013, Prot. ISTEC CNR N. 0001556 of 14/12/2012 and N. 0000646 of 05/04/2013) (CO-2017-16 and Addendum of 10/10/2017, Prot. ISTEC CNR N. 0003649 of 17/10/2017 and N. 0000517 of 14/03/2019) Total Budget: EUR 190.000.

2012-2013:
Member of the Local Organizing Committee of the **International Congress MiMe** – *Materials in Medicine (http://mime.centuria-agenzia.it).* Prot. ISTEC CNR N.0000825 del 31/03/2015.

2005 to present:
Training and support to the scientific activity of B.Sc., M.Sc. and Ph.D. students at ISTEC-CNR:

- Co-relator and Supervisor of **10 B.Sc. thesis** at the University of Bologna and Parma, Faculty of Industrial Chemistry and Biomedical Engineering.
- Co-relator and Supervisor of **7 PhD thesis** at the University of Bologna, Faculty of Chemistry and Industrial Chemistry and University of Parma, Faculty of Chemistry:
  - Silvia Minardi Ciclo XXVII (2012-2014) "Biomimetic Scaffolds for the Controlled Release of Bioactive Molecules for Tissue Engineering Applications" University of Bologna, Faculty of Chemistry.
  - Elisa Savini Ciclo XXVIII (2013-2015) "Design and development of biomineralized nanostructured devices from natural sources for biomedical applications" University of Bologna, Faculty of Chemistry.

- Gloria Belen Ramirez Rodriguez (S) Ciclo XXIX (2014-2016) "Biomineralization of apatite in the presence of collagen-like peptide as a versatile route for obtaining bone-like scaffolds" University of Bologna, Faculty of Chemistry.
- Elisabetta Campodoni (I) Ciclo XXXI (2016-2018) "Compositi ibridi mediante processi bio-inspirati per applicazioni multifunzionali in medicina" University of Parma, Faculty of Chemistry.
- Lorenzo Degli Esposti (I) Ciclo XXXII (2017-2019) "Sintesi e caratterizzazione di materiali a base di calcio fosfato per applicazioni in nanomedicina" University of Parma, Faculty of Chemistry.
- Manuela Mulazzi (I) Ciclo XXXIII (2018-2020) "Studio dei processi di funzionalizzazione e delle cinetiche di rilascio di farmaci e molecole bioattive da supporti di natura ceramica calciofosfatica e ibrida polimero/ceramico, in forma sia di scaffold porosi 3D che di nano-micro-particelle." University of Parma, Faculty of Chemistry.
- Margherita Montanari (I) Ciclo XXXIV (2019-2021) "Studio di processi *biologically inspired* per la progettazione e lo sviluppo di biomateriali nano strutturati e multifunzionali per la medicina rigenerativa" University of Parma, Faculty of Chemistry. Financed from "Piano Triennale Alte Competenze per la Ricerca, il Trasferimento tecnologico e l'Imprenditorialità - POR FSE 2014/2020. OBIETTIVO TEMATICO 10".

- Yearly seminar for Ph.D. students in Chemistry: "Bioceramics in regenerative medicine", general topic: "Processes and applications of ceramics", University of Bologna, Faculty of Industrial Chemistry, 2010-2014.
- Teaching: "Percorso integrato per esperto chimico dell'industria ceramica". ECAP Emilia Romagna Project n. 2087/03, 2005.

September 2006 to December 2006:
Research stage at the **Hospital for Special Surgery** (HSS), Musculoskeletal Integrity Program, Research Division, at *Boskey Adele PhD* Laboratory. New York, New York, USA.

Reviewer of the following international journal:

- ✓ Biomaterials
- ✓ Acta Biomaterialia
- ✓ Journal of Materials Chemistry B
- ✓ ACS Applied Materials & Interfaces
- ✓ Biomacromolecules
- ✓ Materials Chemistry and Physics
- ✓ Journal of Material Science: Materials in Medicine
- ✓ International Journal of Molecular Sciences
- ✓ Bioinspired, Biomimetic and Nanobiomaterials

Research Skills

Expertise on Material Science: synthesis methodologies, forming methods for the production of prototypes, investigation of the relations between micro- nano-structural properties and material performance.
18 years of experience in the development of biomineralization processes towards nanostructured hybrid biomimetic composites for the development of 3D porous scaffold aimed to the regeneration of bone, osteochondral and periodontal tissue. Development of polymeric functionalized hydrogels and scaffolds, obtained through blending processes, for the regeneration of not mineralized tissue like cardiac tissue, tendon, ligament, cartilage. Development of bioactive biomimetic and superparamagnetic nanoparticles and hybrid beads as drug delivery systems.

Recent activities are focused on:

- development of bio-hybrid composites based on natural polymers (collagen, gelatin, alginate, chitosan, natural cellulosic fibers, fatty acids), mineralized with nanostructured biomimetic apatites developed following biologically inspired processes;
- development of bio-hybrid scaffolds exhibiting mineralization gradients, obtained through interpenetration of bio-hybrid composites for the selective regeneration of bone, osteo-cartilaginous tissues and periodontal regions;
- development of porous bio-hybrid scaffold endowed with intrinsic magnetic properties;
- development of polymeric functionalized scaffolds, obtained through blending processes, for the regeneration of not mineralized tissue like cardiac tissue, tendon, ligament, cartilage;
- development of 3D structures suitable as HMEf devices fully biodegradable and low cost obtained starting form waste material by green processes;
- development of intrinsically superparamagnetic iron doped hydroxyapatite suitable for applications in tissue regeneration, nanomedicine and theranostic (imaging with MRI, hyperthermia therapy);
- development of doped apatite for application in cosmetic field: SPF booster in sunscreen lotions, raw materials for male-up formulations.

Chemical-Physic-Morphological characterization of the developed materials with the technique: XRD, FT-IR, ICP, UV-VIS, TG-DSC, SEM-FEG, ESEM-EDS, DMTA.

Membership

Since 2002: Member of the Italian Ceramic Society (I.Ecer.S)

Since 2002: Member of the Italian Society of Biomaterials

Since 2011: Member of the American Ceramic Society

Since 2020: Member of the European Society for Biomaterials (ESB)

Awards

2018

Winner of a PhD fellow financed from Emilia-Romagna Region in the framework of "Piano Triennale Alte Competenze per la Ricerca, il Trasferimento tecnologico e l'Imprenditorialità" Budget 86.700 € Prot. CNR-ISTEC N. 0001318 del 05/06/2018

2014

Winner of the **Small** Cover Competition 2014. Published in October 2014 the Image entitle "*Multiscale Patterning of a Biomimetic Scaffold Integrated with Composite Microspheres"* S. Minardi, **M. Sandri**, J. O. Martinez, I. K. Yazdi, X. Liu, M. Ferrari, B. K. Weiner, A. Tampieri, E. Tasciotti.

2012

Winner of the **Materials Today** Cover Competition 2011. Published in May 2012 the Image entitle "*Bio-inspired artificial scaffolds and the quest to replicate biology*" C. Cunha, S. Panseri, **M. Sandri**, M. Marcacci and A. Tampieri.

2011

The article "*A conceptually new type of bio-hybrid scaffold for bone regeneration"* A. Tampieri, E. Landi, F. Valentini, **M. Sandri**, T. D'Alessandro, V. Dediu, M. Marcacci **Nanotechnology** 22; (2011) 015104 (8pp) has been selected for the Nanotechnology Highlights 2011.

2008

The article "*Design of graded biomimetic osteochondral composite scaffolds*" A. Tampieri, **M. Sandri**, E. Landi, D. Pressato, S. Francioli, R. Quarto, I. Martin. 2008 **Biomaterials** 29 (26), 3539 has been selected by the Literature Awareness System (UK) as one of the most important articles of the year.

Main international collaborations

- HMRI – Houston Methodist Research Institute (TX, USA) (Dr. E. Tasciotti, Dr. M. Ferrari)
- University of Basel (Switzerland) (Dr. A. Banfi) (Dr. I. Martin)
- Columbia University NY, NY (USA) (Dr. C. Hung)
- University of York (UK) (Dr. R. Kröger)
- University of Dresden (Germany) (Dr. M. Gelinsky)
- University of Brighton, UK (Dr. M. Santin)
- Friedrich-Shiller Universitat Jena (Germany) (Dr. F. Müller)
- University of Leeds (UK) (Dr. F. Meldrum)
- University of Edinburgh (England) (Dr. D. Salter)
- University of Santiago de Compostela (Spain) (Dr. J. Rivas)
- FORSCHUNGSZENTRUM ROSSENDORF EV (Germany) (Dr. T. Herrmannsdoerfer)
- Central Institute of Orthopedics and Traumatology of Russia (Russia) (Dr. A. Kupryakov)

Publications

Author of more than 104 peer-reviewed papers published on international journals: **H-index = 30, i-10 index = 65, total citations > 4398** [source: Google Scholar]. Scopus Author ID: 35327959900
Author of 3 International Patents and 3 National Patent in the field of Biomaterials for Biomedical Applications.
Author of 11 Book Chapters in the field of biomaterials for Bone Regeneration.

Papers in refereed international journals

1. Carlström I.E., Rashad A., Campodoni E., Sandri M., Syverud K., Bolstad A.I., Mustafa K. *Cross-Linked Gelatin-Nanocellulose Scaffolds for Bone Tissue Engineering* **Materials Letters** (2020) 127326 https://doi.org/10.1016/j.matlet.2020.127326 **IF 3.019**
2. Dozio S.M., Montesi M., Campodoni E., Sandri M., Piattelli A., Tampieri A., Panseri S. *Differences in osteogenic induction of Human Mesenchymal Stem cells between a tailored 3D hybrid scaffold and a 2D standard culture.* **Journal of Materials Science: Materials in Medicine** (2019) 30:136 doi: 10.1007/s10856-019-6346-3 **IF 2.467**
3. Dellaquila A., Greco G., Campodoni E., Mazzocchi M., Mazzolai B., Tampieri A., Pugno N., Sandri M. *Optimized production of a high-performance hybrid biomaterial: biomineralized spider silk for bone tissue engineering.* **Journal of Applied Polymer Science** (2019) 137, 48739. DOI:10.1002/app.48739 **IF 2.18**
4. Tampieri A., Sandri M., Iafisco M., Panseri S., Montesi M., Adamiano A., Dapporto M., Campodoni E., Dozio S.M., Degli Esposti L., Sprio S. Nanotechnological approach and bio-inspired materials to face degenerative diseases in aging. **Aging Clinical and Experimental Research.** (2019) https://doi.org/10.1007/s40520-019-01365-6 **IF 2.331**
5. Ding M., Koroma K.E., Sorensen J.R., Sandri M., Tampieri A., Jespersen S.M. and Overgaard S. *Collagen-hydroxyapatite composite substitute and bone marrow nuclear cells on posterolateral spine fusion in sheep.* **Journal of Biomaterials Applications.** (2019) 1-10 DOI: 10.1177/0885328219851315 **IF 2.082**
6. Bortolomai I., Sandri M., Draghici E., Fontana E., Campodoni E., Marcovecchio G.E., Ferrua F., Perani L., Spinelli A., Canu T., Di Tomaso T., Sergi L., Esposito A., Lombardo A., Naldini L., Tampieri A.,

Hollander G.A., Villa A. and Bosticardo M. *Gene modification and 3D scaffolds as novel tools to allow the use of postnatal thymic epithelial cells for thymus regeneration approaches.* **Stem Cells Translational Medicine** 00 (2019) 1–16; http://dx.doi.org/10.1002/sctm.18-0218, **IF 4.92**

7. Filardo G., Roffi A., Fey T., Fini M., Giavaresi G., Marcacci M., Martínez-Fernández J., Martini L., Ramírez-Rico J., Salamanna F., Sandri M., Sprio S., Tampieri A., Kon E. *Vegetable hierarchical structures as template for bone regeneration: New bio-ceramization process for the development of a bone scaffold applied to an experimental sheep model*. **Journal of Biomedical Materials Research Part B: Applied Biomaterials** (2019) 1–12. https://doi.org/10.1002/jbm.b.34414 **IF 3.373**
8. Roffi A., Kon E., Perdisa F., Fini M., Di Martino A., Parrilli A., Salamanna F., Sandri M., Sartori M., Sprio S., Tampieri A., Marcacci M., Filardo G. *A Composite Chitosan-Reinforced Scaffold Fails to Provide Osteochondral Regeneration.* **International Journal of Molecular Sciences** - Special Issue Molecular and Tissue Engineering Approaches in Musculoskeletal Regenerative Medicine 20(9) (2019) 2227; doi:10.3390/ijms20092227 **IF 3.687**
9. Rashad A., Suliman S., Mustafa M., Pedersen T.O., Campodoni E., Sandri M., Syverud K., Mustafa K. *Inflammatory Responses and Host Tissue Reactions to Wood-Based Nanocellulose Scaffolds* **Material Science and Engineering C** 97 (2019) 208-221 **IF 5.080**
10. Campodoni E., Heggset E.B., Rashad A., Ramírez-Rodríguez G.B., Mustafa K., Syverud K., Tampieri A., Sandri M. *Polymeric 3D scaffolds for tissue regeneration: evaluation of biopolymer nanocomposite reinforced with cellulose nanofibrils.* **Material Science & Engineering C** 94 (2019) 867-878 **IF 5.080**
11. Fernandes Patrício T.M., Panseri S., Montesi M., Iafisco M., Sandri M., Tampieri A., Sprio S. *Superparamagnetic hybrid microspheres affecting osteoblasts.* **Materials Science & Engineering C** 96 (2019) 234–247 **IF 5.080**
12. Sprio S., Campodoni E., Sandri M., Preti L., Keppler T., Müller F. A., Pugno N. M., Tampieri A. *A Graded Multifunctional Hybrid Scaffold with Superparamagnetic Ability for Periodontal Regeneration*. **International Journal of Molecular Sciences** 19 (2018) 3604 **IF 3.687**
13. Menale C., Campodoni E., Palagano E., Mantero S., Erreni M., Inforzato A., Fontana E., Schena F., van't Hof R., Sandri M., Tampieri A., Villa A., Sobacchi C. *MSC-seeded biomimetic scaffolds as factory of soluble RANKL in Rankl-deficient osteopetrosis.* **Stem Cells Translational Medicine** (2018) 9999:1 www.StemCellsTM.com **IF 4.929**
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98. A. Tampieri, G. Celotti, E. Landi, M. Sandri. *Magnesium doped hydroxyapatite: synthesis and characterization,* **Key Engineering Materials** Vols.264-268 (2004) pp. 2051-2054
99. E. Landi, A. Tampieri, G. Celotti, L. Vichi, M. Sandri. *Influence of synthesis and sintering parameters on the characteristics of carbonate apatite,* **Biomaterials** 25 (2004) pp. 1763-1770 **IF: 8.387**
100. Shu Chin Ma, A.L. Costa, E. Landi, A. Ravaglioli, M. Sandri, A. Tampieri. I*n vitro characterization of hydroxyapatite microparticles as gene carriers*. 9th **Ceramics, Cells and Tissues** Meeting, Faenza 29 Sett-1 Ott 2004. [Proceedings]
101. A. Arcelli, D. Balducci, A. Grandi, G. Porzi, M. Sandri, S. Sandri. *Chiral 1,4-morpholin-2,5-diones. Synthesis and Evaluation as Glucosidase Inhibitors,* **Monatshefte fur Chemie** 135 (2004) pp. 951-958 **IF: 1.222**
102. N. Roveri, G. Falini, M.C. Sidoti, A. Tampieri, E. Landi, M. Sandri, B. Parma. *Biologically inspired growth of hydroxyapatite nanocrystals inside self-assembled collagen fibers,* **Materials Science and Engineering C** 23 (2003) pp. 441-446 **IF: 1.812**
103. A. Tampieri, G. Celotti, E. Landi, M. Sandri, N. Roveri, G. Falini. *Biologically inspired synthesis of bone-like composite: Self-assembled collagen fibers/hydroxyapatite nanocrystals.* **Journal of Biomedical Materials Research Part A** 67A (2003) pp. 618-625 **IF: 3.04**
104. F. Piccinelli, G. Porzi, M. Sandri, S. Sandri. *Stereocontrolled synthesis of enantiomerically pure unsatured analogues of 2,6-DAP. Part5* **Tetrahedron: *Asymmetry*** 14 (2003) pp. 393-398. **IF: 2.108**

Patents

1. 102017000022625: *Filtro per lo scambio di calore ed umidità per applicazione in campo medicale e procedimento per la sua produzione.*
Inventors: Sandri Monica, Sprio Simone, Tampieri Anna
Registration date (priority date): 28/02/2017 - Italian patent
Filter for the exchange of heat and moisture for application in the medical field and procedure for the production thereof.
International Filing Date: 27/02/2018
International Application No.: PCT/IB2018/051234
International publication Date: 07/09/2018
Pub. No.: WO2018/158684

2. 102016000023614: *Filtro solare fisico costituito da idrossiapatite sostituita in una matrice organica.*
Inventors: Sandri Monica, Sprio Simone, Tampieri Anna
Registration date: 07/03/2016 - Italian patent
Physical solar filter consisting of substituted hydroxyapatite in an organic matrix
International Filing Date: 06/03/2017
International Publication Date: 14/09/2017
International Application No.: PCT/IB2017/051290
Nationalized in: Europe, USA, China, Brasil, Canada and South Corea
Pub. No.: WO2017/153888

3. 102016000023596: *Materiale composito costituito da supporti organici e idrossiapatite sostituita con titanio e/o ferro per uso in celle solari a colorante organico.*
Inventors: Sandri Monica, Sprio Simone, Tampieri Anna, Alessandra Sanson

Registration date: 07/03/2016
Italian patent

4. RM2014A000326: *Cemento iniettabile apatitico ionicamente multi-sostituito per vertebroplastica rigenerativa.*
Inventors: Sprio Simone, Tampieri Anna, Sandri Monica, Panseri Silvia, Logroscino Giandomenico
Registration date: 19/06/2014
Italian patent

5. WO2012014172: *Intrinsically Magnetic Hydroxyapatite*.
Inventors: Tampieri Anna, Landi Elena, Sandri Monica, Pressato Daniele, Rivas Rey José, Banobre López Manuel, Marcacci Maurilio.
Registration date (priority date): 29/07/2010
International Application No.: PCT/IB2011/053362
Designated States: ITMI20101420 (A1) IT1401487 (B1) AU2011284364 (A1) AU2011284364 (B2) BR112013002030 (A2) CA2806680 (A1) CA2806680 (C) CN103038161 (A) CN103038161 (B) EP2598437 (A1) EP2598437 (B1) IL224432 (A) JP2013538775 (A) JP5822927 (B2) KR20140009968 (A) KR101854380 (B1) KR20140009968 (A) MX2013001169 (A) MX349464 (B) NZ607003 (A) RU2013109226 (A) SG188186 (A1) US2013129634 (A1) US9327027 (B2) ZA201301272 (B)

6. WO2007045953: *A composite based on an apatite and a polysaccharide, method for its preparation and uses there of*.
Inventors: Landi Elena, Tampieri Anna, Sandri Monica, Di Fede Sergio, Pressato Daniele. Serial n°: PCT/IB2006/002843
Registration date: 12/10/2006

- Supporting reviewer for the defense of the following international patent:

1. WO2006092718: Cartilaginiform and osteochondral substitute comprising multilayer structure and use thereof. Inventors: Tampieri Anna, Pressato Daniele, De Luca Claudio, Di Fede Sergio, Landi Elena. Registration date: 08/09/2006. Serial n°: PCT/IB2006/000452
2. WO2007045954: A plurisubstituted hydroxyapatite and the composite thereof with a natural and/or synthetic polymer, their preparation and uses thereof. Inventors: Landi Elena, Tampieri Anna, Celotti Giancarlo, Sprio Simone, Pressato Daniele, De Luca Claudio.
Registration date: 26/04/2007. Serial n°: PCT/IB2006/002844
3. WO2005082780: Biomimetic compounds containing hydroxyapatites substituted with magnesium and carbonate, and the processes used to obtain them. Inventors: Altamura Maria, Biagini Graziella, Goso Cristina, Roveri Norberto, Tampieri Anna, Tosetti Alessandro.
Registration date: 09/09/2005. Serial n°: PCT/EP2005/050815
4. EP1447104: "Process to synthesize artificial bone tissue". Inventors: Tampieri Anna, Celotti Giancarlo, Roveri Norberto, Landi Elena.
Registration date: 18/08/2004
Designated States: EP1447104 (A1); EP1447104 (B1); ES2334503 (T3); DK1447104 (T3); AT444766 (T). Licensed to FINCERAMICA from 01/06/2010 a S.p.A. Faenza (RA)

Book chapters

1. Guarino V., Scaglione S., Sandri M., Sprio S., Tampieri A., Ambrosio L. *Composite scaffolds for bone and osteochondral defects.* In Alina-Maria Holban and Alexandru Mihai Grumezescu ed: Materials for Biomedical Engineering: Hydrogels and Polymer-based Scaffolds. Elsevier Publishing, Chapter 10, 2019, 297-337. https://doi.org/10.1016/B978-0-12-816901-8.00010-9

2. Preti L, Lambiase B, Campodoni E, Sandri M, Ruffini A, Pugno N, Tampieri A and Sprio S. *Nature-inspired processes and structures: new paradigms to develop highly bioactive devices for hard tissue regeneration*. In Ruby Srivastava ed: Bio-Inspired Technology. Published by IntechOpen. DOI: 10.5772/intechopen.82740. Online 02/2019.
3. Campodoni E, Patricio T, Montesi M, Tampieri A, Sandri M, Sprio S. *Biomineralization process generating hybrid nano- and micro-carriers.* In Focarete ML and Tampieri A ads: Core-Shell Nanostructures for Drug Delivery and Theranostics, Woodhead Publishing, Chapter I, 2018, 19-34.
4. Sprio S, Sandri M, Iafisco M, Panseri S, Montesi M, Ruffini A, Adamiano A, Ballardini A and Tampieri A. *Nature-Inspired Nanotechnology and Smart Magnetic Activation: Two Groundbreaking Approaches Toward a New Generation of Biomaterials for Hard Tissue Regeneration*. In Alessandro Rozim Zorzi and Joao Batista de Miranda eds: Advanced Techniques in Bone Regeneration, ISBN 978-953-51-2539-6. http://dx.doi.org/10.5772/63229, Chapter 7, 2016.
5. Tampieri A, Sandri M, Panseri S, Adamiano A, Montesi M, Sprio S. B*iologically-inspired nanomaterials and nano-bio-magnetism: a synergy among new emerging concepts in Regenerative Medicine.* In Tampieri A, Sprio S eds: Bio-inspired Regenerative Medicine: Materials, Processes and Clinical Applications, PAN Stanford Publishing, Singapore, Chapter 1, 2016.
6. Toni R, Bassi E, Zini N, Zamparelli A, Barbaro F, Dallatana D, Mosca S, Lippi G, Spaletta G, Bassoli E, Denti L, Gatto A, Parrilli A, Fini M, Giardino R, Sandri M, Sprio S, Tampieri A. *Bioartificial endocrine organs: at the cutting edge of translational research in endocrinology.* In Tampieri A, Sprio S eds: Bio-inspired Regenerative Medicine: Materials, Processes and Clinical Applications, PAN Stanford Publishing, Singapore, Chapter 15, 2016.
7. Tampieri A, Iafisco M, Sprio S, Ruffini A, Panseri S, Montesi M, Adamiano A, Sandri M. *Hydroxyapatite: From Nanocrystals to Hybrid Nanocomposites for Regenerative Medicine.* In "Handbook of Bioceramics and Biocomposites", Ed. Antoniac I. Meteor Springer International Publishing, Chapter 6, 2016. (ISBN 978-3-319-09230-0). DOI 10.1007/978-3-319-09230-0_6-1.
8. Sprio S, Sandri M, Iafisco M, Panseri S, Filardo G, Kon E, Marcacci, M, Tampieri A. *Composite biomedical foams for engineering bone tissue*. In Netti PA, editor. Biomedical foams for tissue engineering applications, Woodhead Publishing Limited, Cambridge (UK), (2014) 249-280.
9. Sprio S, Sandri M, Panseri S, Iafisco M, Ruffini A, Minardi S, Tampieri A. *Bone substitutes based on biomineralization*. In Mallick KK, editor. Bone substitutes biomaterials, Woodhead Publishing, 2014.
10. Sprio S, Sandri M, Iafisco M, Panseri S, Cunha C, Ruffini A, Zini N, Toni R, Tampieri A. *Biomimetic materials in regenerative medicine*. In Ruys AJ, editor. Biomimetic biomaterials: Structure and applications. Woodhead Publishing Limited, Cambridge (UK) 3-45 (2013).
11. Tampieri A, Sprio S, Landi E, Sandri M. *Developing biocomposites as scaffolds in regenerative medicine.* In L. Ambrosio ed. Biomedical composites. Woodhead Publishing**,** Abington Hall, Abington, Cambridge, CB21 6AH, United Kingdom, (2009) 547-572.

Invited oral presentations

1. Biomateriali e Biotecnologie in chirurgia vertebrale held in Bologna, Italy. February 17th 2017. Invited Oral communication entitled "Bio-inspired collagen/hydroxyapatite nano-composites in posterolateral spine fusion: form the lab to the clinic".
2. GRIBOI the 24th Interdisciplinary Research Conference on Injectable Osteoarticular Biomaterials and Bone Augmentation Procedures, Nantes, France. 5th – 7th May 2014. Invited lecture "Magnetic Bioactive and Biodegradable Hollow Fe-doped Hydroxyapatite coated Poly(L-Lactic) acid Micro-Nanospheres".

3. MiMe Conference on Materials in Medicine, Faenza, Italy. 8th – 11th October 2013. Invited lecture "Bio-inspired nano-composites for osteochondral regeneration".
4. Lecture at the Nanotecnology Day – *NANO is better*, October 2013 at Pala-Playstation, Italia in Miniatura (RM, Italy) "Materiali Intelligenti Nano-strutturati: l'arte di riparare tessuti e organi".
5. WBC – World Biotechnology Congress, Boston – USA. June 2013. Invited Lecture "New magnetic nanobeads fully biodegradable for biomedical applications".
6. Lecture "Collagen based scaffold for tissue regeneration" March 2012 at The Methodist Hospital Research Institute. Houston, Texas – USA.

Oral presentations

1. Materials.it 2018 - Italian National Conference on Materials Science and Technology held in Bologna, Italy. October 22nd – 26th 2018. Oral communication entitled "Ti and Fe doped hydroxyapatite: novel biomimetic UV-filter for sunscreen formulation".
2. Bioceramics 29 - Toulouse, France, 25-27th October 2017. Oral communication entitled "Hybrid magnetic nanocomposite supporting cell proliferation and tuning regenerative process".
3. Materials.it 2016 - Italian National Conference on Materials Science and Technology held in Catania, Italy. December 12th – 16th 2016. Oral communication entitled "Biomineralized magnetic hybrid nanocomposite supporting cell proliferation and tuning regenerative process".
4. NICE - 3rd International Conference on Bioinspired and Biobased Chemistry and Materials that is held in Nice, France. October, 16th – 19th 2016. Oral communication entitled "Biopolymeric porous material: Nature inspires a new generation of Heat and Moisture exchange device for medical applications".
5. MedTech Business - Advance short program on MedTech Entrepreneurship at Università della Svizzera Italiana, Lugano. 13th – 17th June 2016. Oral communication entitled "Smart biodegradable particles will take care of you: prevent, detect and treat diseases".
6. GIS: XXXIX Congresso Nazionale della Società di Italiana di Chirurgia vertebrale e gruppo Italiano Scoliosi, Firenze, Italy. 5th – 7th May 2016. Oral Presentation "Effects of bio-inspired collagen-hydroxyapatite nano-composites on posterolateral spine fusion in sheep: form the lab to the clinic".
7. SIB, Lecce, Italy. 18th – 20th June 2012. Oral Presentation "Superparamagnetic bio-mimetic hybrid composites".
8. SIB, 24th May 2010. Oral Presentation "Biomimetic Fe Hydroxyapatite endowed with intrinsic magnetization".
9. IBS, 14th International Biotechnology Symposium and Exhibition, Rimini, Italy. 14th – 18th September 2010. Oral Presentation "Collagen based scaffold for biomedical applications".
10. ESB - 19th European Conference on Biomaterials, Sorrento, Italy. 11th – 15th September 2005. Oral Presentation: "Biohybrid Composites for tissue engineering".
11. Ceramics, Cells and Tissues, 9th Annual Seminar & Meeting, Faenza, Italy. 28th September - 01st October 2004. Oral Presentation: "Biohybrid HA/ALG composite as bone substitute with drug delivery function".
12. Congresso Nazionale Biomateriali. Biomateriali: Ricerca e Industria, Ischia (NA), Italy. 8th – 10th September 2003. Oral Presentation: "Sintesi biologicamente ispirata di compositi sostitutivi del tessuto osseo".
13. 2nd Workshop on Pharmacobiometallics, held at la Certosa di Pontignano, Siena, Italy. 29th November – 01st December 2002. Oral Presentation: "Design and synthesis of biologically inspired composite".

Poster presentation

1. ASME 2013 2nd Global Congress on NanoEngineering for Medicine and Biology (NEMB2013) 04–06/02/2013 Boston, MA, USA, Poster Presentation "Fully biodegradable magnetic micro-nanoparticles: a new platform for tissue regeneration and theranostic".
2. NICE - Nature Inspires Chemistry Engineers 3-5/10/2012 Nizza – F, Poster Presentation "FeHA: superparamagnetism in apatite and bio-hybrid composites".
3. TERMIS 5-8/09/2012 Vienna, Austria two Poster Presentation "Intrinsically magnetic Fe-substituted Hydroxyapatite for medical application" e "Intelligent bio-materials for Tissue Regeneration and Nanomedicine".
4. 9th WBC World Biomaterials Congress, 01/06/2012, Chengdu, China, Poster Presentation "New Collagen/BNC blending to improve the performances of biohybrid composites for osteochondral regeneration".
5. Orthopaedic Research UK, Brighton - Tissue Regeneration Strategies and Innovative Biomaterials in Orthopaedic Surgery 3/04/2012. Poster Presentation "Co-fibration and biomineralization of Collagen/BNC blends for bone and cartilage regeneration".
6. ASME– Frontiers in Biomedical Devices Conference Newport Beach, California, USA 20-21/09/2010 Poster Presentation "Engineered Membranes to improve Cardiac Function in Ischemic Rat Hearts"
7. EuroNanoforum 2-5 June 2009 Praga. Poster Presentation "Biologically Inspired Bio-hybrid Magnetic Composites"**.**
8. IX ECerS, Porto Rose (Slovenia) June 2005. Poster Presentation: "Apatite/Alginate biohybrid composites for biomedical application".
9. Ceramics, Cells and Tissues (9th Annual Seminar & Meeting) Faenza (RA) Italy 28/September/2004-01/October/2004. Poster Presentation: "Biomimetic doped-HA/Collagen composites".
10. Nanocomposites 2004 - San Francisco (USA) dal 01 al 03/September/2004. Poster presentation: "Synthetic biomimetic nanostructured hydroxyapatite".
11. ECERS 2003, 8th Conference and Exhibition of the European Ceramic Society ad Istanbul-Turkey 29/June-03/July/2003, Poster Presentation: "Magnesium doped hydroxyapatite: synthesis and characterization".

Signature
February 28th 2020