CV SIMONE SPRIO

Simone Sprio

M.Sc. in Physics, Ph.D. in Chemistry.

WORKING CONTACTS

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CURRENT POSITION

- Director of Research at the Institute of Science, Technology and Sustainability for Ceramics, National Research Council, ISSMC-CNR
- Since 2008 I am scientific responsible of the research activity on Bioceramics for Medicine at ISSMC-CNR.
- Main fields of investigation are: Innovative nanomaterials and nanotechnologies applied to Regenerative Medicine and Nanomedicine: Ceramic and calcium phosphate-based biomaterials, apatite nanoparticles, 3-D porous scaffolds and cements with cell-instructive properties, 3-D biomorphic ceramics.

SCIENTIFIC SKILLS

Development of multifunctional bioceramic materials for regenerative medicine: bioactive calcium phosphates: nanoparticles and 3D solid scaffolds; antibacterial ceramics; ion-doping in bioactive hydroxyapatite and their biological relevance; injectable ceramic pastes for cements and solid scaffolds; magnetic bioceramics; design and optimization of fabrication processes for 3-D porous ceramic scaffolds (e.g. replica, direct foaming); bioactive ceramic composites; biomorphic transformation processes: from nature to hierarchically organized ceramics; heterogeneous gas-solid reactions; reactive sintering of functional ceramics, hot pressing, hot forging, hot isostatic pressing.

PUBLICATIONS

- Author of >**150 peer-reviewed papers including 25 book chapters**. h-index = **43** N. Citations: **>7000** (*Source: Google Scholar*)
- Inventor of **9 funded international patents, 4 of which licensed or sold to companies,** related to new materials and devices for health and energy.
- Relator or co-author of > **100 communications** and Relator of **26 Invited Lectures at International Conferences**.

INVOLVEMENT IN NATIONAL AND INTERNATIONAL RESEARCH PROJECTS

- **Scientific Responsible or WP Leader** in EC-funded, National and International Projects (BIORIMA, BIO-INSPIRE, TEM-PLANT, OPHIS, SMILEY, NIPROGEN, NANOCOATINGS, CNR-IDEA Guanajuato) (total budget CNR: ~4.000.000 EUR)
- **Task leader** in EC-funded Projects (MAGISTER, AUTOBONE, NANOMAX)
- **Task leader** in National Projects (PNRR-Finalizzata, Dinamica 2.0, BIOBOS, DINAMICA, Invecchiamento, Medicina Personalizzata, Bioprotesi)
- **Scientific Responsible** of Research Contracts with companies (Finceramica Faenza SpA, GreenBone ortho Spa, NDG srl, CURASEPT, total budget: >1.200.000 EUR)

EDITORIAL ACTIVITIES

2021-Today: **Member of the Board of Reviewers** of the Journal *Biomedicines* (ISSN 2227-9059).
2020-2022: **Guest Editor** of the Special Issue: "Recent advances in bioceramics for health", Frontiers in Bioengineering and Biotechnology.
2020-2021: **Guest Editor** of the Special Issue "Bioceramic Composites" of the Open Access journal: Journal of Composite Sciences, MDPI.
2017-Today**: Member of the Editorial Board** of the Open Access Journal: Advanced Nano-Bio-Materials and Devices**.**
2016: **Editor** of the book: Bio-inspired Regenerative Medicine: Materials, Processes and Clinical Applications, Pan Stanford Publishing Pte. Ltd., 2016, Singapore
2013: **Guest Editor** of the special issue S.I.: MiMe conference 2013, J Mater Sci: Mater Med. 25(10), Oct 2014.

ORGANIZING ACTIVITIES

2025: **Member of the International Scientific Committee** of the International Conference Bioceramics35, 30th

October-02nd November 2025, Rio de Janeiro, Brazil.

2024: **Member of the International Scientific Committee** of the International Conference Bioceramics34, 18-21 October 2024, Shanghai, China.

2024: **Member of the International Scientific Committee** of the International Conference BIOMAH, 15-18 October 2024, Rome.

2023: **Member of the Scientific Committee** of the International Conference Bioceramics33, 17-20 2023, Solothurn, Switzerland.

2019-2022: **Co-Chair** of the International Conference BIOCERAMICS32, 20-23 September 2022, Mestre (VE), Italy.

2022: **Organizer of the Symposium** Focused Session 1: Bio-inspired Processing of Advanced Materials of the of the 46th International Conference and Expo on Advanced Ceramics and Composite (ICACC2022), 23-28 January 2022, Daytona Beach (FL), USA.

2021: **Organizer of the** Symposium Focused Session 1: Bio-Inspired, Green Processing, and Related Technologies of Advanced Materials, of the of the 45th International Conference and Expo on Advanced Ceramics and Composite (ICACC2021), 08-11 February 2021, Daytona Beach (FL), USA.

2020: **Member of the Scientific Committee** of the National Conference SIB 2021, 9-11 June 2021, Lecce, Italy.

2019: **Organizer of the Symposium** Focused Session 1: Bio-inspired Processing of Advanced Materials of the 44th International Conference and Expo on Advanced Ceramics and Composites (ICACC2020), 26-31 January 2020, Daytona Beach (FL), USA.

2019: **Organizer of the Symposium**: F5 Structural and bio-inspired bioceramic implants, of the International Conference EUROMAT 2019, 1-5 September 2019, Stocholm, Sweden.

2019: **Member of the Scientific Committee** of the National Conference SIB 2019, 5-7 June 2019, Caserta, Italy.

2019: **Member of the Organizing Committee** of the International Conference "Tissue regeneration: Advanced ceramics and composites" (TRACE-2), 3-5 April 2019, Villa Vigoni (CO), Italy.

2019: **Track Chair** del Track: "Regenerative medicine" **5th Biotechnology World Congress 2019",** 13-15 February 2019, Bangkok, Thailand.

2018-2019: **Organizer of the Symposium** Focused Session 1: Bio-inspired Processing of Advanced Materials of the International Conference ICACC2019, 27 January-01 February 2019, Daytona Beach (FL), USA.

2018: **Member of the Scientific Committee** of the National Conference SIB 2018, 6-8 June 2018, Rende (CS), Italy.

2015: **Chair of the International Workshop**: *Nature inspires chemical engineers to develop smart nano-devices*, NanotechITALY 2015, 25 November 2015, Bologna, Italy.

2014: **Member of the International Advisory Committee** of the International Conference FRACTURE 2014: 9-11 August 2014, Kottayam (India).

2013: **Member of the Organizing Committee** of the International Conference MiMe: Materials in Medicine, 1st Edition: 8-11 October 2013, Faenza, Italia.

2009: **Organizer of the Symposium**: *Biomimetic Materials and Organic (Bio)sensors in Health and Diagnostics*, of the International Conference EUROMAT 200907-10 September 2009, Glasgow, UK.

TRAINING AND TEACHING ACTIVITIES

2022-2032: Qualified as **Full Professor** in Chemistry and Inorganic Systems (Abilitazione Scientifica Nazionale-03/B1).

2014-2024: Qualified as **Associate Professor** in Materials Science and Technology (Abilitazione Scientifica Nazionale -09/D1).

- **Co-relator and Supervisor** of 10 Ph.D. students, 3 M.Sc. student, 2 B.Sc. theses, Faculty of Chemistry, Material Science, Biomedical Engineering, Biomedical Sciences, Biotechnology, Universities of Bologna, Parma, Palermo, Padova, Torino.
- Delivered **several Training Lectures** in the frame of Courses for students in Chemistry, Biotechnology, Biomedical Engineering, and Medicine, about advanced biomaterials for bone regeneration and their applicability to specific clinical needs.

PARTICIPATION TO INTERNATIONAL WORKGROUPS AND CLUSTERS

- 2021-Today: Member of the Working Group "Bioceramics" of the European Ceramic Society
- 2018-Today: Member of the Board of the Italian Society for Biomaterials (SIB).
- 2017-Today: Representative of ISTEC-CNR of the Workgroup BioMedTech, representing the Value Chain "New

generation MedTech" Cluster of the Emilia Romagna Region: "Industries of Health and Wellbeing".

- 2014 – Member of the 4M2020 Foresight: Advanced Manufacturing of Multi-Material Multi-Functional Products Towards 2020 and Beyond
- 2015 – Member of the Engineering and Upscaling Cluster of the European Community – CIRCABC – Research

AWARDS

- **Master in Bio-business applied to the Life Science** as **winner** of the Special Prize of Innovation of Switzerland, Working Capital – National Prize of Innovation 2011, Torino 18.11.2011, project BONE-AID.
- **Master in Entrepreneurship** (Entrepreneurial Journey to Silicon Valley) as **winner** of the competition Start Cup CNR-Il Sole 24 Ore, North Italy, Genova 04.11.2010, project BONE-AID.
- **Wooden Bones** (i.e. the process to transform wood into bone scaffolds) awarded by TIME Magazine as the 30th most important invention in 2009.

LIST OF FUNDED PATENTS

1) WO2020030442 (A1). System for chemical transformation of 3D state materials.
Inventors: Pradella LG, Ballardini A, Santi L, Tampieri A, **Sprio S**, Ruffini A
Registration date: 09/08/2018.
Filed in: **EU, USA, Giappone, Australia, Singapore, Corea, Brasile, Malesia, Cina, Canada, Filippine, Israele, Nuova Zelanda, India.**

2) WO2018158684. Filter for the exchange of heat and moisture for application in the medical field and procedure for the production thereof.
Inventors: Sandri M, Tampieri A, **Sprio S**
Registration date: 27/02/2018.
Filed in: **EU, USA, Canada, China, Korea**

3) ITUA20161412 (A1). Composite material made of organic substrates and hydroxyapatite substituted with titanium and/or iron for use in dye sensitized solar cells.
Inventors: Tampieri A, Sandri M, **Sprio S**, Sanson A.
Registration date: 07/03/2016.
Filed in: **Italy**

4) WO2017153888. Physical solar filters consisting of substituted hydroxyapatite in an organic matrix.
Inventors: Tampieri A, Sandri M, **Sprio S**.
Registration date: 07/03/2016.
Filed in: **EU, USA, Canada, China, Korea, Brazil**

5) MI-2015-0003155. Apatiti multisostituite e loro uso nella rimineralizzazione e riduzione della sensibilità dentinale.
Inventors: Boiocchi LE, Tampieri A, Ruffini A, **Sprio S**
Priority date: 10/12/2015
Filed in*:* **Italy**

6) WO2017021894 (A1). Large 3D porous scaffolds made of active hydroxyapatite obtained by biomorphic transformation of natural structures and process for obtaining them
Inventors: Tampieri A, **Sprio S**, Ruffini A
Priority date: Registration date: 06/08/2015
Filed in: **EU, USA, Russia, Cina, San Marino, Australia, Hong Kong, India, Canada, Giappone Corea, South Africa, Brasile, Mexico, Malesia, Israele, Vietnam**

7) WO2015193836 (A1): Injectable apatitic cement ionically multi-substituted for regenerative vertebroplasty and kyphoplasty.
Inventors: **Sprio S**, Tampieri A, Sandri M, Panseri S, Logroscino G.
Registration date: 19/06/2014
Filed in: **EU (Italy, France, UK; Germany, Spain, Switzerland, the Netherlands, Belgium)**

8) WO 2012063201 (A1): Implants for "load-bearing" bone substitutions having hierarchical organized architecture deriving from transformation of vegetal structures
Inventors: Tampieri A, **Sprio S**, Ruffini A, Martínez-Fernández J, Torres Raya C, Varela Feria FM, Ramírez Rico J, Harmand M- F.
Registration date: 08/11/2011
Filed in: **EU, USA, Russia, China, San Marino, Australia, Hong Kong, India, Canada.**

9) WO 2007045954: A plurisubstituted hydroxyapatite and the composite thereof with a natural and/or synthetic polymer, their preparation and uses thereof.
Inventors: Landi E, Tampieri A, Celotti G, **Sprio S**, Pressato D, De Luca C. Registration date: 12/10/2006
Filed in: **EU, USA.**

LIST OF PEER-REVIEWED PUBLICATIONS

h-index = **40** N. citations: **>6600** (Google Scholar)

ISI Journals

1) Barbaro F, Di Conza G, Quartulli FP, Quarantini E, Quarantini M, Zini N, Fabbri C, Mosca S, Caravelli S, Mosca M, Vescovi P, **Sprio S**, Tampieri A, Toni R. Correlation between tooth decay and insulin resistance in normal weight males prompts a role for myo-inositol as a regenerative factor in dentistry and oral surgery: a feasibility study.2024. *Front. Bioeng. Biotechnol.* 12:1374135. doi: 10.3389/fbioe.2024.1374135
2) Pupilli F, Tavoni M, Marsan O, Drouet C, Tampieri A, **Sprio S**. Tuning Mg Doping and Features of Bone-like Apatite Nanoparticles Obtained via Hydrothermal Synthesis. 2024. *Langmuir* 40, 16557−16570. doi: 10.1021/acs.langmuir.4c02035
3) Pupilli F, Tavoni M, Drouet C, Tampieri A, **Sprio S**. Iron-doped hydroxyapatite by hydrothermal synthesis: Factors modulating the Fe2+, Fe3+ content. 2024 *Open Ceramics* 18, 100610. doi: 10.1016/j.oceram.2024.100610
4) Lanzillotti C, Iaquinta MR, De Pace R, Mosaico M, Patergnani S, Giorgi C, Tavoni M, Dapporto M, **Sprio S**, Tampieri A, Montesi M, Martini F, Mazzoni E. Osteosarcoma cell death induced by innovative scaffolds doped with chemotherapeutics. 2024. *Journal of Cellular Physiology* 239(5): e31256
5) Inam H, Sprio S, Tavoni M, Abbas Z, Pupilli F, Tampieri A. Magnetic Hydroxyapatite Nanoparticles in Regenerative Medicine and Nanomedicine. 2024. *International Journal of Molecular Sciences* 25, 2809. **doi:** 10.3390/ijms25052809
6) Lomphithak T, Sae-Fung A, **Sprio S**, Tampieri A, Jitkaew S, Fadeel B. (2023) Exploiting the ferroaddiction of pancreatic cancer cells using Fe-doped nanoparticles. *Nanomedicine: Nanotechnology, Biology and Medicine.* 55: 102714. Doi: 10.1016/j.nano.2023.102714
7) Toni R, Barbaro F, Di Conza G, Zini N, Remaggi G, Elviri L, Spaletta G, Quarantini E, Quarantini M, Mosca S, Caravelli S, Mosca M, Ravanetti F, **Sprio S**, Tampieri A. (2023) A bioartificial and vasculomorphic bone matrix-based organoid mimicking microanatomy of flat and short bones. *Journal of Biomedical Materials Research Part B: Applied Biomaterials*. Doi: 10/1002.jbm.b.35329.
8) Fontaine M, Bartolami E, Prono M, Béal D, Blosi M, Costa AL, Ravagli C, Baldi G, **Sprio S**, Tampieri A, Fenoglio I, Tran L, Fadeel B, Carriere M. (2023) Nanomaterial genotoxicity evaluation using the high-throughput p53-binding protein 1 (53BP1) assay. *Plos One* 18(9): e0288737. Doi: 10.1371/journal.pone.0288737.
9) Maglio M, Sartori M, Gambardella A, Shelyakova T, Dediu VA, Santin M, Piñeiro Y, Bañobre López M, Rivas J, Tampieri A, **Sprio S**, Martini L, Gatti A, Russo A, Giavaresi G, Fini M. (2023) Bone Regeneration Guided by a Magnetized Scaffold in an Ovine Defect Model. *International Journal of Molecular Sciences* 24(1): 747. Doi: 10.3390/ijms24010747.
10) **Sprio S**, Antoniac I, Chevalier J, Iafisco M, Sandri M, Tampieri A. (2023) Recent advances in bioceramics for health. *Frontiers in Bioengineering and Biotechnology* 11. Doi: 10.3389/fbioe.2023.1264799.
11) Tampieri A, Kon E, Sandri M, Campodoni E, Dapporto M, **Sprio S**. (2023) Marine-Inspired Approaches as a Smart Tool to Face Osteochondral Regeneration. *Marine Drugs* 21(4): 212. Doi: 10.3390/md21040212
12) Dapporto M, Tavoni M, Restivo E, Carella F, Bruni G, Mercatali L, Visai L, Tampieri A, Iafisco M, **Sprio S**. (2022) Strontium-doped apatitic bone cements with tunable antibacterial and antibiofilm ability. *Frontiers in Bioengineering and Biotechnology* 10: 969641. Doi: 10.3389/fbioe.2022.969641.
13) Gomes SIL, Guimarães B, Campodoni E, Sandri M, **Sprio S**, Blosi M, Costa AL, Scott-Fordsmand JJ, Amorim MJB. (2022) Safer and Sustainable-by-Design Hydroxyapatite Nanobiomaterials for Biomedical Applications: Assessment of Environmental Hazards. *Nanomaterials* 12(22): 4060. Doi: 10.3390/nano12224060.
14) Guimarães B, Gomes SIL, Campodoni E, Sandri M, **Sprio S**, Blosi M, Costa AL, Amorim MJB, Janeck J Scott-Fordsmand JJ. (2022) Environmental Hazards of Nanobiomaterials (Hydroxyapatite-Based NMs)—A Case Study with *Folsomia candida*—Effects from Long Term Exposure. *Toxics* 10(11) 704. Doi: 10.3390/toxics10110704.
15) Pupilli F, Ruffini A, Dapporto M, Tavoni M, Tampieri A, **Sprio S**. (2022) Design strategies and biomimetic approaches for calcium phosphate scaffolds in bone tissue regeneration. *Biomimetics* 7(3): 112. Doi: 10.3390/biomimetics7030112.
16) Antonello G, Marucco A, Gazzano E, Kainourgios P, Ravagli C, Gonzalez-Paredes A, **Sprio S**, Padín-González E, Soliman MG, Beal D, Barbero F, Gasco P, Baldi G, Carriere M, Monopoli MP, Charitidis CA, Bergamaschi E, Fenoglio I, Riganti C. (2022) Changes of physico-chemical properties of nano-biomaterials by digestion fluids affect the physiological properties of epithelial intestinal cells and barrier models. *Particle and Fiber Toxicology* 19(1): 49. Doi: 10.1186/s12989-022-00491-w
17) Kon E, Salamanna F, Filardo G, Di Matteo B, Shabshin N, Shani J, Fini M, Perdisa F, Parrilli A, **Sprio S**, Ruffini A, Marcacci

M, Tampieri A. (2021) Bone regeneration in load-bearing segmental defects guided by biomorphic, hierarchically structured apatitic scaffold. *Frontiers in Bioengineering and Biotechnology* 9: 734486. doi: 10.3389/fbioe.2021.734486.

18) Ruffini A, Sandri M, Dapporto M, Campodoni E, Tampieri A, **Sprio S**. (2021) Nature-Inspired Unconventional Approaches to Develop 3D Bioceramic Scaffolds with Enhanced Regenerative Ability. *Biomedicines* 9(8): 916. doi: 10.3390/biomedicines9080916
19) Abbas Z, Dapporto M, Tampieri A, **Sprio S.** (2021) Toughening of bioceramic composites for bone regeneration. *Journal of Composite Science* 5: 259. doi:10.3390/jcs5100259.
20) Piconi C, **Sprio S**. (2021) Oxide Bioceramic Composites in Orthopedics and Dentistry. *J Comp Sci* 5(8): 206. doi: 10.3390/jcs5080206.
21) Tavoni M, Dapporto M, Tampieri A, **Sprio S**. (2021) Bioactive calcium phosphate-based ceramic composites for bone regeneration. *J Comp Sci* 5: 227. doi: 10.3390/jcs5090227.
22) **Sprio S**, Ruffini A, Tampieri A. (2021). Biomorphic transformations: a leap forward in getting nanostructured 3-D bioceramics. *Front Chem* 9: 728907. doi: 10.3389/fchem.2021.728907.
23) Iaquinta MR, Torreggiani E, Mazziotta C, Ruffini A, **Sprio S**, Tampieri A, Tognon M, Martini F, Mazzoni E. (2021) In Vitro Osteoinductivity Assay of Hydroxylapatite Scaffolds, Obtained with Biomorphic Transformation Processes, Assessed Using Human Adipose Stem Cell Cultures. *Int J Mol Sci* 22: 7092. doi: 10.3390/ijms22137092.
24) Mazzoni E, Iaquinta MR, Lanzillotti C, Mazziotta C, Maritati M, Montesi M, **Sprio S**, Tampieri A, Tognon M, Martini F. (2021) Bioactive Materials for Soft Tissue Repair. *Front Bioeng Biotechn* 9: 613787. doi: 10.3389/fbioe.2021.613787.
25) Dapporto M, Gardini D, Tampieri A, **Sprio S**. (2021) Nanostructured Strontium-Doped Calcium Phosphate Cements: A Multifactorial Design. *Appl Sci* 11(5): 2075. doi: 10.3390/app11052075.
26) Ramírez-Rodríguez GB, Pereira AR, Herrmann M, Hansmann J, Delgado-López JM, **Sprio S**, Tampieri A, Sandri M. (2021) Biomimetic Mineralization Promotes Viability and Differentiation of Human Mesenchymal Stem Cells in a Perfusion Bioreactor. *Int J Mol Sci* 22: 1447. doi: 10.3390/ijms22031447
27) Fernandes Patrício TM, Mumcuoglu D, Montesi M, Panseri S, Witte-Bouma J, Fahmy Garcia S, Sandri M, Tampieri A, Farrell E, **Sprio S** (2021). Bio-inspired polymeric iron-doped hydroxyapatite microspheres as a tunable carrier of rhBMP-2. *Mater Sci Eng C mater Biol Appl* 119: 111410. doi: 10.1016/j.msec.2020.111410
28) Tampieri A, Sandri M, Iafisco M, Panseri S, Montesi M, Adamiano A, Dapporto M, Campodoni E, Dozio, SM, Degli Esposti L, **Sprio S** (2021). Nanotechnological approach and bio-inspired materials to face degenerative diseases in ageing. *Aging Clin Experim Res.* doi: 10.1007/s40520-019-01365-6
29) Bassi G, Panseri S, Dozio SM, Sandri M, Campodoni E, Dapporto M, **Sprio S**, Tampieri A, Montesi M (2020). Scaffold-based 3D cellular models mimicking the heterogeneity of osteosarcoma stem cell niche. *Sci Rep* 10(1): 1-12.
30) Guerrieri AN, Montesi M, **Sprio S**, Laranga R, Mercatali L, Tampieri A, Donati DM, Lucarelli E. Innovative options for bone metastasis treatment: an extensive analysis on biomaterials-based strategies for orthopedic surgeons (2020). *Front. Bioeng Biotech* 8: 1142. doi: 10.3389/fbioe.2020.589964.
31) Toni R, Di Conza G, Barbaro F, Zini N, Consolini E, Dallatana D, Antoniel M, Quarantini E, Maioli S, Bruni CA, Elviri L, Panseri S, **Sprio S**, Sandri M, Tampieri A (2020). Three-dimensional bone organoids for studying immunobiology of osteoporosis and immunomodulatory role of endocrine disrupting chemicals on bone. *Front. Immunol. - Autoimm Autoinflam Disord* 11: 1737. doi: 10.3389/fimmu.2020.01737
32) **Sprio S**, Dapporto M, Preti L, Mazzoni E, Iaquinta MR, Martini F, Tognon M, Pugno NM, Restivo E, Visai L, Tampieri A. (2020) Enhancement of the biological and mechanical performances of sintered hydroxyapatite by multiple ions doping. *Front Mater* 7: 224. doi: 10.3389/fmats.2020.00224
33) Scialla S, Carella F, Dapporto M, **Sprio S**, Piancastelli A, Palazzo B, Adamiano A, Degli Esposti L, Iafisco M, Piccirillo C. (2020) Mussel shell-derived macroporous 3D scaffold: characterization and optimization study of a bioceramic from circular economy. *Mar Drugs* 18, 309; doi:10.3390/md18060309
34) Bigoni D, Cavuoto R, Misseroni D, Paggi M, Ruffini A, **Sprio S**, Tampieri A. (2020) Ceramics with the signature of wood. A mechanical insight. *Mater Today Bio.* 5, 100032. doi.org/10.1016/j.mtbio.2019.100032
35) **Sprio S**, Panseri S, Montesi M, Dapporto M, Ruffini A, Dozio SM, Cavuoto R, Misseroni D, Paggi M, Bigoni D, Tampieri A. (2020) Hierarchical porosity inherited by natural sources affects the mechanical and biological behaviour of bone scaffolds. *J Eur Ceram Soc* 40: 1717-1727. doi: 10.1016/j.jeurceramsoc.2019.11.015.
36) Iaquinta M R, Mazzoni E, Mazzoni I, Rotondo J C, Mazziotta C, Tampieri A, **Sprio S**, Montesi M, Tognon M, Martini F. (2019) Adult stem cells for bone regeneration and repair. *Front Cells Devel Biol* 7: 268. doi: 10.3389/fcell.2019.00268
37) Tampieri A, Sandri M, Iafisco M, Panseri S, Montesi M, Adamiano A, Dapporto M, Campodoni E, Dozio, SM, Degli Esposti L, **Sprio S**. (2019) Nanotechnological approach and bio-inspired materials to face degenerative diseases in ageing. *Aging Clin Exper Res* 33(4): 805-821, doi: 10.1007/s40520-019-01365-6.
38) **Sprio S**, Preti L, Montesi M, Panseri S, Adamiano A, Vandini A, Pugno N, Tampieri A (2019). Surface phenomena enhancing the antibacterial and osteogenic ability of nanocrystalline hydroxyapatite, activated by multiple ions doping. *ACS Biomat*

Sci Eng 5(11) 5947-5959. doi: 10.1021/acsbiomaterials.9b00893

39) Filardo G, Roffi A, Fey T, Fini M, Giavaresi G, Marcacci M, Martinez-Fernandez J, Martini L, Ramirez-Rico J, Salamanna F, Sandri M, **Sprio S**, Tampieri A, Kon E. (2019) 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. *J Biomed Mater Res. Part B: Applied Biomaterials,* doi: 10.1002/jbm.b.34414.

40) 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. (2019) A composite chitosan-based scaffold fails to provide osteochondral regeneration. *Int J Mol Sci,* 20(9): 2227.

41) Tampieri A, Ruffini A, Ballardini A, Montesi M, Panseri S, Salamanna F, Fini M, **Sprio S** (2019). Heterogeneous chemistry in the 3-D state: an original approach to generate bioactive, mechanically-competent bone scaffold. *Biomater Sci.*, 2019, 7, 307-321. doi: 10.1039/c8bm01145a

42) Fernandes Patricio TM, Panseri S, Montesi M, Iafisco M, Sandri M, Tampieri A, **Sprio S** (2019). Superparamagnetic hybrid microspheres affecting osteoblasts behaviour. *J Mater Sci Eng B* 96: 234-247. https://doi.org/10.1016/j.msec.2018.11.014

43) **Sprio S**, Campodoni E, Sandri M, Preti L, Keppler T, Mueller FA, Pugno N, Tampieri A (2018). Graded multifunctional hybrid scaffold with superparamagnetic ability for periodontal regeneration. *Int J Mol Sci*., 19(11): 3604-3621.

44) Bertoglio F, Bloise N, Oriano M, Petrini P, **Sprio S**, Imbriani M, Tampieri A, Visai L. (2018) Treatment of biofilm communities: an update on new tools from the nanosized world. *Appl. Sci.*, *8*(6), 845-864.

45) Piconi C, **Sprio S**. (2018) Zirconia Implants: Is There a Future? *Curr Oral Health Rep*. 1-8. https://doi.org/10.1007/s40496-018-0187-x

46) Russo A, Bianchi M, Sartori M, Boi M, Giavaresi G, Salter DM, Jelic M, Maltarello MC, Ortolani A, **Sprio S**, Fini M, Tampieri A, Marcacci M. (2018) Bone regeneration in a rabbit critical femoral defect by means of magnetic hydroxyapatite macroporous scaffolds. *J Biomed Mater Res B: Appl Biomater* 106(2):546-554. doi: 10.1002/jbm.b.33836.

47) Shankar KG, Gostynska N, Dapporto M, Campodoni E, Montesi M, Panseri S, Tampieri A, Kon E, Marcacci M, **Sprio S**, Sandri M. (2018) Evaluation of different crosslinking agents on hybrid biomimetic collagen-hydroxyapatite composites for regenerative medicine. *Int. J. Biol Macromol* 106, 739-748.

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