

Curriculum Vitae

SIMONE FAILLA

Work experiences

in progress

Technologist, at the National Research Council - Institute of Science, Technology and Sustainability for the Development of Ceramic Materials (CNR-ISSMC) in Faenza (RA).
Technological Sector: Design and/or management of systems, instrumentation, and services

2022 – 2023

Research Grant from the National Research Council (CNR-ISSMC) in Faenza (RA)
Grant Type "C" - Senior Grant

2021 – 2022

Research Grant from the National Research Council (CNR-ISTEC) in Faenza (RA)
Grant Type "B" - Postdoctoral Grant

2019 – 2021

Research Grant from the National Research Council (CNR-ISTEC) in Faenza (RA)
Grant Type "A" - Professional Research Grant

2016 - 2019

PhD student at the National Research Council CNR-ISTEC in Faenza (RA)

2015 - 2016

Research Grant from the National Research Council (CNR-ISTEC) in Faenza (RA)
Grant Type "A" - Professional Research Grant

RESEARCH PRODUCTS

Scientific papers

- A. Vinci, M. Mor, **S. Failla**, P. Galizia, L. Zoli, D. Sciti, Novel CMCs based on B₄C-TiB₂ blends and carbon fibres, J. Eur. Ceram. Soc. 45, 10 (2025) 117355.
<https://doi.org/10.1016/j.jeurceramsoc.2025.117355>.
- S. Taraborelli, **S. Failla**, D. Sciti, S. M. Smith II, J. Watts, W. G. Fahrenholtz, G. E. Hilmas, Thermomechanical and thermal characterization of pressureless sintered TiB₂, Open Ceramics 22 (2025), 100754.
<https://doi.org/10.1016/j.oceram.2025.100754>
- P. Galizia, A. Uccello, F. Ghezzi, L. Labate, B. Tiribilli, O. Hanzel, M. Salvadori, F. Brandi, **S. Failla**, C. Melandri, A. Cremona, M. Pedroni, M. De Angeli, E. Perelli Cippo, L. A. Gizzi, P. Tatarko, D. Sciti, Thermal properties of MB₂-WC (M= Ti, Zr, Hf) and tungsten and their stability after deuterium plasma exposure, Open Ceramics 20 (2024), 100696. <https://doi.org/10.1016/j.oceram.2024.100696>.
- P. Galizia, **S. Failla**, C. Melandri, D. Sciti, Local indentation response of carbon fibers embedded in a harsh environment: The sintered ultra-high temperature ceramic matrix, J. Eur. Ceram. Soc. 44, 9 (2023) 5347–5357.
<https://doi.org/10.1016/j.jeurceramsoc.2023.12.025>.
- S. Taraborelli, **S. Failla**, E. Sani, D. Sciti, Sintering, Mechanical and Optical Properties of TiB₂ Composites with and without High-Energy Milling, Nanomaterials 2023, 13, 2683, <https://doi.org/10.3390/nano13192683>.
- E. Sani, D. Sciti, **S. Failla**, C. Melandri, A. Bellucci, S. Orlando, D. M. Trucchi, Multi-Scale Femtosecond-Laser Texturing for Photothermal Efficiency Enhancement on Solar Absorbers Based on TaB₂ Ceramics, Nanomaterials 2023, 13 (10), 1692, <https://doi.org/10.3390/nano13101692>.
- M. Mor, M. Meiser, N. Langhof, A. Vinci, **S. Failla**, B. A. Laukant, S. Tremmel, S. Schafföner, D. Sciti, Tribological behavior of carbon fiber reinforced ZrB₂ based Ultra High Temperature Ceramics, J. Eur. Ceram. Soc. 43 (2023) 5413–5424.
<https://doi.org/10.1016/j.jeurceramsoc.2023.05.019>.
- D. Sciti, A. Vinci, L. Zoli, P. Galizia, **S. Failla**, S. Mungiguerra, G. Di Martino, A. Cecere, R. Savino. Propulsion tests on ultra-high temperature ceramic matrix composites for reusable rocket nozzles. Journal of Advanced Ceramics, 2023, <https://doi.org/10.26599/JAC.2023.9220759>

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- M. Mor, A. Vinci, **S. Failla**, P. Galizia, L. Zoli, D. Sciti, A novel approach for manufacturing of layered, ultra-refractory composites using pliable, short fibre-reinforced ceramic sheets, *Journal of Advanced Ceramics*. 12 (2022) 1–14. doi:<https://doi.org/10.26599/JAC.2023.9220674>.
- D. Sciti, **S. Failla**, S. Turan, U. Savaci, P. Galizia, Properties and ballistic tests of strong B₄C-TiB₂ composites densified by gas pressure sintering, *J. Eur. Ceram. Soc.* 43 (2023) 1334–1342. <https://doi.org/10.1016/j.jeurceramsoc.2022.11.066>
- A. Santagata, M. L. Pace, A. Bellucci, M. Mastellone, E. Bolli, V. Valentini, S. Orlando, E. Sani, **S. Failla**, D. Sciti, D. M. Trucchi, Enhanced and Selective Absorption of Molybdenum Nanostructured Surfaces for Concentrated Solar Energy Applications, *Materials* 2022, 15, 8333, <https://doi.org/10.3390/ma15238333>.
- F. Servadei, L. Zoli, P. Galizia, C. Melandri, **S. Failla**, D. Sciti, Effect of annealing treatments on the mechanical behaviour of UHTCMCs prepared by Mild Polymer Infiltration and Pyrolysis, *Ceramic International*, <https://doi.org/10.1016/j.ceramint.2022.11.183>
- D. Sciti, S. Guicciardi, L. Zoli, **S. Failla**, C. Melandri, Dry sliding wear behaviour of ZrB₂-based ceramics: Self-mated and cross coupling with alumina, *Journal of the European Ceramic Society*. 42 (2022) 6335–6346. doi:[10.1016/j.jeurceramsoc.2022.07.022](https://doi.org/10.1016/j.jeurceramsoc.2022.07.022).
- L. Zoli, **S. Failla**, E. Sani, D. Sciti, Novel ceramic fibre - Zirconium diboride composites for solar receivers in concentrating solar power systems, *Compos. Part B*. 242 (2022) 110081. <https://doi.org/10.1016/j.compositesb.2022.110081>.
- N. Obradović, W. G. Fahrenholtz, C. Corlett, S. Filipović, M. G. Nikolić, B. A. Marinković, **S. Failla**, D. Sciti, E. Sani, Microstructural and optical properties of MgAl₂O₄ Spinel: Effect of Mechanical Activation, Yttrium and Graphene addition, *Materials* 2021, 14, 7674. <https://doi.org/10.3390/ma14247674>
- B. Baker, V. Venkatachalam, L. Zoli, A. Vinci, **S. Failla**, D. Sciti, J. Binner, Ablation behaviour of carbon fibre ultra-high temperature composites at oblique angles of attack, *Materials & Design*. 212 (2021) 110199. doi:[10.1016/j.matdes.2021.110199](https://doi.org/10.1016/j.matdes.2021.110199)
- **S. Failla**, S. Fu, D. Sciti, S. Grasso, Flash spark plasma sintering of pure TiB₂, *Open Ceramics* 5 (2021). <https://doi.org/10.1016/j.oceram.2021.100075>.
- L. Silvestroni, **S. Failla**, N. Gilli, C. Melandri, U. Savaci, S. Turan, D. Sciti, Disclosing small scale length properties in core-shell structured B₄C-TiB₂ composites, *Materials and Design*. 197 (2021) 109204. doi:[10.1016/j.matdes.2020.109204](https://doi.org/10.1016/j.matdes.2020.109204).
- **S. Failla**, P. Galizia, S. Fu, S. Grasso, D. Sciti, Formation of high entropy metal diborides using arc-melting and combinatorial approach to study quinary and quaternary solid solutions, *J. Eur. Ceram. Soc.* 40 (2019) 588–593. doi:[10.1016/j.jeurceramsoc.2019.10.051](https://doi.org/10.1016/j.jeurceramsoc.2019.10.051).
- E. Sani, **S. Failla**, D. Sciti, *Scripta Materialia*, Dark alumina for novel solar receivers, *Scr. Mater.* 176 (2020) 58–62. doi:[10.1016/j.scriptamat.2019.09.038](https://doi.org/10.1016/j.scriptamat.2019.09.038)
- L. Silvestroni, A. Vinci, **S. Failla**, L. Zoli, V. Rubio, J. Binner, D. Sciti, Ablation behaviour of ultra-high temperature ceramic matrix composites: role of MeSi₂ addition, *J. Eur. Ceram. Soc.* 39 (2019) 2771–2781. doi:[10.1016/j.jeurceramsoc.2019.03.031](https://doi.org/10.1016/j.jeurceramsoc.2019.03.031)
- **S. Failla**, P. Galizia, L. Zoli, A. Vinci, D. Sciti, Toughening effect of non-periodic fiber distribution on crack propagation energy of UHTC composites, *J. Alloys Compd.* 777 (2019) 612–618. doi:[10.1016/j.jallcom.2018.11.043](https://doi.org/10.1016/j.jallcom.2018.11.043).
- L. Silvestroni, **S. Failla**, V. Vinokurov, I. Neshpor, and O. Grigoriev, “Core-shell structure: An effective feature for strengthening ZrB₂ ceramics,” *Scr. Mater.*, vol. 160, pp. 1–4, 2019

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- **S. Failla**, C. Melandri, L. Zoli, G. Zucca, D. Sciti, Journal of the European Ceramic Society Hard and easy sinterable B_4C - TiB_2 -based composites doped with WC, J. Eur. Ceram. Soc. 38 (2018) 3089–3095. doi:10.1016/j.jeurceramsoc.2018.02.041.
- F. Monteverde, C. Melandri, **S. Failla**, R.J. Grohsmeyer, G.E. Hilmas, W.G. Fahrenholtz, Escape from the strength-to-toughness paradox: Bulk ceramics through dual composite architectures, J. Eur. Ceram. Soc. 38 (2018) 2961–2970. doi:10.1016/j.jeurceramsoc.2018.02.003.
- L. Silvestroni, **S. Failla**, I. Neshpor, O. Grigoriev, Method to improve the oxidation resistance of ZrB_2 -based ceramics for reusable space systems, J. Eur. Ceram. Soc. 38 (2018) 2467–2476. doi:10.1016/j.jeurceramsoc.2018.01.025.
- P. Galizia, **S. Failla**, L. Zoli, D. Sciti, Tough salami-inspired Cf/ ZrB_2 UHTCMCs produced by electrophoretic deposition, J. Eur. Ceram. Soc. 38 (2018) 403–409. doi:10.1016/j.jeurceramsoc.2017.09.047.

Book Chapter

- L. Zoli, D. Sciti, A. Vinci, P. Galizia, F. Monteverde, **S. Failla**, L. Silvestroni, Ultra-High Temperature Ceramic Matrix Composites (UHTCMC), Ref. Modul. Mater. Sci. Mater. Eng. (2020) 1–13. doi:10.1016/B978-0-12-818542-1.00023-0.

Patent

- Processo per la produzione di materiali compositi ceramici per scopi balistici a base di B_4C , TiB_2 e B_4C/TiB_2 (**Depositato Italia-Europa**). N. deposito ITALIA 102022000001658, 01/02/2022, Rif. 11.C2040.12.IT.97, anno di deposito 2022. N. deposito EUROPEA 23154291.1, data di deposito 31/01/2023. Inventori: Diletta Sciti, **Simone Failla**

WORKS PRESENTED AT INTERNATIONAL CONFERENCES Oral presentations

Invited

- **S. Failla**, A. Vinci, L. Silvestroni, N. Gilli, D. Sciti, L. Zoli; “Studying the densification of B_4C - TiB_2 composites by hot pressing and pressureless sintering method” 45th International Conference & Exposition on Advanced Ceramics & Composites (ICACC), Virtual only event, 08-12 February 2021

Contributions

- **S. Failla**, S. Taraborelli, D. Sciti “Advanced processing techniques for B_4C - TiB_2 -Based Materials: Sintering with and without pressure” 48th International Conference & Exposition on Advanced Ceramics & Composites (ICACC), Daytona Beach, Florida, January 28–February 02, 2024
- **S. Failla**, P. Galizia, S. Turan, U. Savaci, D. Sciti: “Investigating the microstructure, characteristics, and ballistic performance of durable B_4C - TiB_2 composites densified with Gas Pressure Sintering”, ECerS 2023 18th Conference & Exhibition of the European Ceramic Society July 2-6, 2023 Lyon, France
- **S. Failla**, E. Sani, D. Sciti: “Lightweight Alumina- B_4C composites for structural and functional applications.”, Ceramics in Europe 2022, Krakow, Poland, 10-14 July 2022
- **S. Failla**, S. Fu, S. Grasso, D. Sciti; “Flash spark plasma sintering of pure TiB_2 ” 15th International Ceramics Congress (CIMTEC), Montecatini Terme, Italy, June 20-24, 2022
- **S. Failla**, P. Galizia, S. Fu, S. Grasso, D. Sciti; “Observing the formation of high entropy metal diborides and studying the influence of single boride in the solid solution using arc-melting as consolidation technique” 10th International Conference on High Temperature Ceramic Matrix Composites (HT-CMC/10th), Bordeaux, France, 22-26 Sept. 2019.
- **S. Failla**, L. Zoli, D. Sciti; “Studying the incorporation of WC to make B_4C - TiB_2 system more interesting for armour applications” 43rd International Conference &

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Exposition on Advanced Ceramics & Composites (ICACC), Daytona Beach, Florida, January 28–February 01, 2019

- **S. Failla**, L. Zoli, P. Galizia, D. Sciti; “Novel UD UHTCMCs Produced by EPD and Sintering” 14th International Ceramics Congress (CIMTEC), Perugia, Italy, June 4-8, 2018

Posters

- **S. Failla**, D. Sciti, L. Zoli, L. Silvestroni, F. Monteverde: “Field Assisted Hybrid Spark Plasma Sintering Technology: a new infrastructure at ISTECCNR to produce ‘hard-to-sinter’ multifunctional materials”, Giornata di dipartimento “Department of Chemical Science and Materials Technologies” (DSCTM), 26-28 October, 2022, Aci Castello (CT), Italy
- **S. Failla**, S. Fu, S. Grasso, D. Sciti; “Flash spark plasma sintering of pure TiB₂” 44th International Conference & Exposition on Advanced Ceramics & Composites (ICACC), Daytona Beach, Florida, January 27–31, 2020
- **S. Failla**, L. Zoli, P. Galizia, A. Vinci, D. Sciti: “Electrophoretic deposition of ZrB₂ and TiB₂ on carbon fibers: A process for novel UD UHTCMCs”, 69th Annual MEETING of International Society of Electrochemistry, September 2-7 2018, Bologna, Italy
- **S. Failla**, L. Zoli, P. Galizia, D. Sciti: “Electrophoretic deposition of dispersion of ZrB₂ and SiC powders on woven carbon fibers for the processing of novel UHTCMCs”, ECerS 2017 15th Conference & Exhibition of the European Ceramic Society July 9-13, 2017/ Budapest, Hungary
- **S. Failla**, C. Baldisserrì, A. Costa, A. Vinci, D. Sciti: " Electrophoretic deposition of dispersion ZrB₂ and SiC powder on woven carbon fiber for the processing of novel UHTCMCs", Materials.it, Materials Science and Technology, Aci Castello (CT) Italy, December 12 - 16, 2016

EDUCATION AND TRAINING

- | | |
|-------------|--|
| 2016 - 2019 | PhD in Materials Science and Technology 32nd cycle
University of Parma |
| 2012 - 2014 | Master's Degree in Industrial Chemistry
Alma Mater Studiorum - University of Bologna - Faculty of Industrial Chemistry "Toso Montanari" |
| 2008 - 2012 | Bachelor's Degree in Industrial Chemistry
University of Messina - School of Mathematical, Physical, and Natural Sciences - Faculty of Industrial Chemistry |