CURRICULUM VITAE – ANTONIO VINCI

ESPERIENZA LAVORATIVA

1. **Ricercatore di III livello a tempo determinato (Protocollo 0219193/2023)**
   Istituto di Scienza, Tecnologia e Sostenibilità dei Materiali Ceramici (ISSMC – CNR), Faenza (Italia)
   17/07/2023 – in corso
   Progetto: EcoSister (Ecosystem for Sustainable Transition in Emilia-Romagna) - Messa a punto e sviluppo di un processo di produzione di matriali ceramici fibro-rinforzati con materie prime seconde o da riciclo per l'ottenimento di compositi ceramici sostenibili per la transizione ecologica. Caratterizzazione microstrutturale dei materiali ceramici e delle fibre, studio delle proprietà meccaniche e di resistenza all'ossidazione e confronto con materiali ottenuti da materie prime commerciali.

2. **Assegnista di Ricerca Senior (Protocollo 0002202/2021)**
   Istituto di Scienza, Tecnologia e Sostenibilità dei Materiali Ceramici (ISSMC – CNR), Faenza (Italia)
   22/11/2021 – 17/07/2023
   Progetto: CARBOSPACE (Studio sui compositi ultra-refrattari a base di matrici ceramiche UHTC e fibre di C o SiC per applicazioni in aerospazio, difesa, trasporti ed energia) - Produzione di materiali compositi fibro-rinforzati per l'applicazione dell'aerospazio, difesa e trasporti, mediante processo basato sulla slurry infiltration e sintering con Hot Pressing. Caratterizzazione della microstruttura, proprietà meccaniche e resistenza all'ossidazione, ablazione e usura.

3. **Assegnista di Ricerca Post-Doc (Protocollo 0002358/2020)**
   Istituto di Scienza e Tecnologia dei Ceramici (ISTEC – CNR), Faenza (Italia)
   15/11/2020 – 14/11/2021
   Progetto: InSPiRE (Integrated technologies for Smart buildings and PREdictive maintenance) - Trattamento polveri e produzione di compositi ceramici, caratterizzazione microstrutturale e chimico-fisica di materiali ceramici e studi sulla corrosione.

4. **Assegnista di Ricerca (Protocollo 0002259/2018)**
   Istituto di Scienza e Tecnologia dei Ceramici (ISTEC – CNR), Faenza (Italia)
   10/11/2018 – 9/11/2020
   Progetto: C^3HARME (Next Generation Ceramic Composites For Combustion Harsh Environments And Space) Produzione di compositi ceramici fibrorinforzati per l'aerospazio mediante slurry infiltration e sintering con Hot Pressing o Spark Plasma Sintering. Caratterizzazione microstrutturale e meccanica dei compositi ceramici, e studio del comportamento in ossidazione e ablazione. Messa a punto di un nuovo processo di produzione basato sulla Reactive Melt Infiltration.

5. **Visiting Scientist**
   Deutsches Zentrum für Luft- und Raumfahrt, DLR (German Aerospace Center), Colonia (Germania)
   15/06/2023 – 15/08/2023
   Attività di ricerca: Deposizione di coating a base di Niobio metallico su compositi ceramici fibro-rinforzati a matrice ultra-refrattaria. Ricottura ad alta temperatura e studio dei fenomeni di adesione ed interazione all'interfaccia tra il substrato e il coating. Studio del comportamento in ossidazione sui compositi con e senza coating e studio sull'influenza della ricottura sulla resistenza all'ossidazione.

6. **Visiting Scientist**
   Airbus Aerospace & Defence, Ottobrunn (Germania)
   7/10/2019 – 11/10/2019
   Attività di ricerca: Filament winding di compositi ceramici fibro-rinforzati con matrice ultra-refrattaria, preparazione delle sospensioni ceramiche, design degli esperimenti e supervisione della macchina per Filament Winding. Da questa ricerca sono stati prodotti due articoli su riviste peer review sul filament winding dei compositi ultrarefrattari e sul loro scale up.

7. **Visiting Scientist**
   Deutsches Zentrum für Luft- und Raumfahrt, DLR (German Aerospace Center), Stoccarda (Germania)
   18/06/2018 – 28/07/2018
   Attività di ricerca: Infiltrazione con polimero e pirolisi di preforme a base di fibra di carbonio, precedentemente infiltrate con polveri ultra-refrattarie mediante slurry infiltration, seguite da reactive melt infiltration con silicio o zirconio liquido. Assemblaggio di una camera di zirconia speciale per svolgere test di ossidazione a 2000 - 2200°C a diverse pressioni. Da questa attività di ricerca, sono stati pubblicati due articoli su riviste peer review sul reactive melt infiltration con Zr_2Cu e sull'influenza della pressione sulla resistenza all'ossidazione dei compositi ultra-refrattari.

8. **Visiting Scientist**
   Missouri University of Science and Technology (MS&T), Rolla (MO, Stati Uniti)
   20/07/2017 – 16/09/2017
   Attività di ricerca: Caratterizzazione meccanica ad alta temperatura di compositi ultra-refrattari, fibro-rinforzati, con matrice a base di ZrC, TaC e HfC, da temperatura ambiente a 2100°C in ambiente inerte. Programmazione e taglio di precisione mediante EDM di campioni ceramici. Studio della diffusività termica mediante Laser Flash. Studio della resistività elettrica dei compositi ceramici. Da questa ricerca sono stati pubblicati due articoli su riviste peer review sul comportamento termo-meccanico di compositi a base di TaC e ZrC fino a 2100°C, e sull'influenza del contenuto di fibra sulla resistenza meccanica di compositi a base di HfC fino a 2100°C.

9. **Visiting Scientist**
   Airbus Aerospace & Defence, Ottobrunn (Germania)
   22/03/2017 – 24/03/2017
   Attività di ricerca: Filament winding di compositi ceramici fibro-rinforzati con matrice ultra-refrattaria, preparazione delle sospensioni ceramiche, design degli esperimenti e supervisione della macchina per Filament Winding. Sulla base dei risultati di questa ricerca, è stato successivamente sviluppato lo scale-up di questi materiali.

ISTRUZIONE E FORMAZIONE

1. **Dottorato di Ricerca in Scienza e Tecnologia dei Materiali**
   Università di Parma (in convenzione con ISTEC – CNR)
   01/11/2015 – 15/03/2019
   Voto finale: Eccellente
   Tesi: Fabrication and characterization of fibre reinforced UHTC composites
   Trattamento polveri tramite macinazione a secco e ad umido, studi di reologia sulle sospensioni ceramiche, preparazione di slurry a base acquosa, sviluppo di un processo di slurry infiltration per

preforme in fibra di carbonio di diverso modulo, sinterizzazione di compositi ceramici tramite pressatura a caldo, caratterizzazione della microstruttura e della composizione tramite SEM/EDS/XRD, caratterizzazione meccanica (resistenza a flessione, tenacità a frattura) da temperatura ambiente fino a 2100°C in impianti dedicati, studio del comportamento all'ossidazione da temperatura ambiente fino a 2200°C, studio delle proprietà termiche, scale up del processo (da Ø = 30 mm a 400 mm, da h = 2 mm a 150 mm), preparazione di prototipi per test in ambiente rilevante (TRL = 5/6).

2. **Laurea Magistrale in Chimica Industriale (LM-71)**
   Università di Bologna
   31/10/2013 – 16/10/2015
   Voto finale: 103/110
   Tesi: Catalizzatori per la reazione di Water Gas Shift a media ed alta temperatura
   Preparazione di catalizzatori per la reazione di Water Gas Shift basati sulla fase tipo idrotalcite $CuAl_2O_4$, ottenuta per co-precipitazione di nitrati e cloruri dei metalli con una soluzione di carbonato, e impregnati con indio e gallio metallici. Determinazione della temperatura di attivazione mediante riduzione in programmata di temperatura, assemblaggio di un reattore in scala di laboratorio che operava tra 1-20 bar, misura dell'attività catalitica mediante analisi gas cromatografica dei flussi gassosi in entrata e uscita dal reattore, determinazione della formazione di alcol mediante HPLC.

3. **Laurea Triennale in Chimica Industriale (L-27)**
   Università di Catania
   31/10/2010 – 29/11/2013
   Voto finale: 110/110 con lode
   Tesi: Catalizzatori a base di rutenio e cobalto supportati su titania per la produzione di idrogeno mediante idrolisi catalitica di $NaBH_4$
   Preparazione di catalizzatori per l'idrolisi di $NaBH_4$ per l'applicazione in celle a combustibile a base di Co e Ru metallici supportati su TiO_2 mediante impregnazione e calcinazione. Valutazione della temperatura di attivazione tramite riduzione in programmata di temperatura con H_2. Misura dell'attività del catalizzatore misurando il flusso di H2 sviluppato dalla reazione con una soluzione di $NaBH_4$. Correlazione dell'attività del catalizzatore con la struttura e la morfologia del materiale.

ATTIVITÀ PROFESSIONALI

1. **Abilitazione Scientifica Nazionale**
   17/03/2025 – 17/03/2037
   Abilitato all'esercizio di professore di II fascia per il settore concorsuale 09/D1, Scienza e Tecnologia dei Materiali

2. **Responsabilità di laboratorio (Protocollo 0057081/2025)**
   27/02/2025 – in corso
   Responsabile del laboratorio per la produzione di materiali ceramici ultra-refrattari presso l'Istituto di Scienza, Tecnologia e Sostenibilità dei Materiali Ceramici (ISSMC – CNR), Faenza (Italia)
3. **Editor**
   2/04/2025 – 16/05/2025
   Editor del libro "Ballistic Protection", ISBN: 9783036407678, https://doi.org/10.4028/b-6G91y5

4. **Guest Editor**
   01/02/2023 – 8/09/2023
   Co-Guest Editor per lo special issue "Advances in Ultra-high Temperature Ceramics and Composites" per "Open Ceramics", https://www.sciencedirect.com/special-issue/10THP0SG5FB

5. **Reviewer for peer-review journals**
   2016 – in corso
   Reviewer di articoli scientifici per riviste peer-review: Corrosion Science (20), Journal of the European Ceramic Society (39), Materials (6), Ceramics International (3), International Journal of Applied Ceramic Technology (1)

CORSI, SCUOLE E TRAINING

1. **Training per l'uso di forno speciale Spark Plasma Sintering**
   FCT Systeme GmbH, Faenza
   18/03/2025 – 19/03/2025

2. **Advancements and most recent innovations in EDS and EBSD**
   Oxford Instruments, Istituto di Scienza, Tecnologia e Sostenibilità dei Materiali Ceramici, Faenza
   13/05/2025

3. **EDS, microanalisi a dispersione di energia**
   Mediasystem Lab, BeFactory, Rovereto
   14/05/2024 – 15/05/2024

4. **La microscopia elettronica applicata al processo produttivo della ceramica e degli inchiostri**
   Mediasystem Lab, Università di Modena e Reggio Emilia
   8/05/2018

5. **Public Speaking: Tecniche per una efficace comunicazione**
   Università di Parma
   4/05/2018

6. **Come scrivere un progetto Marie Curie**
   Università di Parma
   12/03/2018 – 13/03/2018

7. **Tecniche di analisi superficiale (XPS-ESCA/AES/ToF-SIMS): principi base e applicazioni industriali**
   Università di Bologna
   1/02/2018 – 2/02/2018

8. **Short course on mechanical properties of ceramics**
   Daytona Beach (FL), Stati Uniti
   25/01/2018 – 26/01/2018

9. **Cristallografia a raggi X**
   Università di Parma
   29/05/2017 – 1/06/2017

10. **Come massimizzare l'impatto in HORIZON 2020**
    Università di Parma
    11/11/2016

11. **Gli aspetti legali e finanziari di un progetto HORIZON 2020**

Università di Parma
7/07/2016

12. **CV day: Progettare e gestire il proprio percorso professionale**
    Università di Parma
    6/05/2016

13. **Leghe leggere e compositi a matrice metallica – corso (4 cfu) del corso di Laurea in Scienze e tecnologie per l'ambiente**
    Università di Bologna, sede di Faenza
    1/02/2016 – 1/06/2016

14. **Materiali inorganici – corso (4 cfu) del corso di Laurea in Scienze e tecnologie per l'ambiente**
    Università di Bologna, sede di Faenza
    1/02/2016 – 1/06/2016

15. **Intellectual property protection – A view from the European Patent Office**
    Università di Parma
    3/12/2015 – 4/12/2015

16. **2° Sinchem School Eramus+**
    Università di Bologna
    16/02/2015 – 17/02/2015

WORKSHOP

1. **European workshop on ceramic matrix composites: insights, innovations & best practices**
   Kilometro Rosso, Bergamo
   31/03/2025 – 1/04/2025

2. **Workshop IC-ISSMC**
   (Webinar) Istituto di Scienza, Tecnologia e Sostenibilità dei Materiali Ceramici, Faenza
   20/02/2025

3. **1st International Workshop for UHTCs and UHT-CMCs at DLR**
   Deutsches Zentrum für Luft- und Raumfahrt, DLR (German Aerospace Center), Colonia (Germania)
   13/07/2023 – 14/07/2023

4. **Acers Winter Workshop on advanced ceramics 2020**
   Daytona Beach (FL), Stati Uniti
   24/01/2020 – 28/01/2020

5. **ACerS Winter Workshop on advanced ceramics 2019**
   Daytona Beach (FL), Stati Uniti
   25/01/2019 – 29/01/2019

6. **Workshop for Young Ceramists**
   Area della Ricerca del CNR, Bologna
   26/11/2018 – 27/11/2018
7. **ACerS Winter Workshop on advanced ceramics 2018**

Daytona Beach (FL), Stati Uniti
19/01/2018 – 23/01/2018

8. **Workshop teorico pratico per preparativa SEM**
   Università degli studi di Modena e Reggio Emilia
   19/05/2016

9. **International workshop on graphene/ceramic composites (WGCC)**
   Cuenca, Spagna
   28/09/2016 – 30/09/2016

COMPETENZE PROFESSIONALI

1. **Produzione di compositi ceramici ultra-refrattari, fibro-rinforzati (UHTCMC), mediante slurry infiltration e sintering** di preforme in fibra di carbonio con matrice ceramica a base di boruri, nitruri e carburi (ZrB_2, HfB_2, TiB_2, ZrC, HfC, TiC, TaC, SiC, WC, B_4C, BN, Si_3N_4) per l'applicazione nell'aerospazio, trasporti ed energia.

2. **Produzione di compositi ceramici e cermet mediante polymer infiltration & pyrolisys e reactive melt infiltration** di preforme in fibra di carbonio con silicio liquido o leghe di zirconio/rame.

3. **Sintesi di polveri ultra-refrattarie** mediante riduzione carbo-boro-termale di ossidi metallici con composti a base di boro o carbonio in forni speciali in ambiente controllato per la produzione di boruri e carburi ultra-refrattari.

4. **Caratterizzazione microstrutturale di compositi ceramici** mediante tecniche di microanalisi come microscopio ottico digitale, microscopio elettronico a scansione (SEM), spettroscopia a dispersione di energia (EDS) e diffrazione a raggi X (XRD).

5. **Caratterizzazione termo-meccanica di compositi ceramici** fibro-rinforzati mediante l'uso di macchine universali per i test meccanici, accoppiate con speciali forni in ambiente controllato per i test di flessione su provini ceramici fino a 2300°C.

6. **Caratterizzazione del comportamento in ossidazione** di compositi ceramici fibro-rinforzati mediante l'uso di forni ad aria fino a 1700°C, analisi termo-gravimetrica (TGA), calorimetria a dispersione di calore (DSC), analisi termica differenziale (DTA), e laser flash per la misura della conduttività termica.

7. **Caratterizzazione reologica** di sospensioni ceramiche a base di carburi e boruri dei metalli di transizione mediante viscosimetro dinamico e misure del potenziale zeta, e messa a punto di slurry ad alto contenuto solido per il processo di slurry infiltration.

8. **Gestione e utilizzo di grandi infrastrutture per il sintering** di materiali ceramici ultra-refrattrari, fibro-rinforzati, mediante Hot Pressing o Pressureless sintering

9. **Uso di attrezzi da lavoro e utensili elettrici** come macchine da taglio, mole, lappatrici manuali e automatiche, trapano verticale per la lavorazione e la lucidatura di materiali ceramici.

10. **Misura della durezza Vickers** mediante l'uso di un indenter accoppiato a microscopio ottico.

11. **Analisi di immagine** di superfici lucide o di frattura per la misura della percentuale volumetrica delle varie fasi, tra cui il contenuto di rinforzo fibroso.

12. **Analisi e identificazione di specie chimiche** mediante spettroscopia UV-Vis e gas cromatografia per l'analisi dei prodotti di reazione all'uscita da un reattore.

13. **Analisi dell'area superficiale e distribuzione delle porosità** mediante analisi BET, e identificazione della temperatura di attivazione di catalizzatori mediante riduzione in programmata di temperatura.

14. **Supporto al referente degli acquisti** per l'acquisto di materie prime o apparecchiature su MEPA o mediante indagine di mercato, e rapporto diretto con le aziende.

PROGETTI

1. **ECOSISTER**
   Istituto di Scienza, Tecnologia e Sostenibilità dei Materiali Ceramici (ISSMC – CNR), Faenza (Italia)
   17/07/2022 – in corso
   Key personnel and full time involvement in the PNRR funded project ECOSISTER (Ecosystem for Sustainable Transition in Emilia-Romagna), spoke 1, WP5 for the development of novel high performance ceramic composite materials obtained by sustainable resources like recycled fibres. Spoke leader: Laura Mazzocchetti, WP5 leader: Diletta Sciti
   Role: powder processing via wet ball milling, preparation of ceramic suspensions, heat treatment and refining of the recycled fibres, preparation of the fibre preforms, fabrication of the ceramic composites via sintering, microstructural and mechanical characterization and comparison with commercial materials.

2. **INFINITE (Protocollo 0001423/2022)**
   Istituto di Scienza, Tecnologia e Sostenibilità dei Materiali Ceramici (ISSMC – CNR), Faenza (Italia)
   18/07/2022 – 17/07/2023
   Key personnel in the project INFINITE n° W911NF2110333 (Liquid phase sintering of C fiber reinforced ultra-high temperature ceramics composites), funded by the U.S. Army Contracting Command and led by dr. Luca Zoli.
   Role: powder processing via wet ball milling, preparation of water-based slurries, interface studies at high temperature, microstructure and composition characterization via SEM/EDS/XRD, mechanical characterization (flexural strength, fracture toughness).

3. **CARBOSPACE (Protocollo 0001420/2022)**
   Istituto di Scienza, Tecnologia e Sostenibilità dei Materiali Ceramici (ISSMC – CNR), Faenza (Italia)
   12/05/2020 – 17/07/2023
   Key personnel in the project CARBOSPACE (Studio sui compositi ultra-refrattari a base di matrici ceramiche UHTC e fibre di carbonio o carburo di silicio per applicazioni in aerospazio, difesa, trasporti ed energia, duration: 4 years), led by project leader Diletta Sciti.
   Role: powder processing via dry and wet mixing of carbides, borides, nitrides and oxides, powder synthesis, preparation of vast arrays of ceramic suspensions, slurry infiltration of fibre preforms with different ceramic matrices, production of gradient structures (varying the matrix composition or fibre amount), sintering by hot pressing or spark plasma sintering, microstructure and composition characterization via SEM/EDS/XRD, mechanical characterization (flexural strength, fracture toughness, hardness),, study of the oxidation and ablation behaviour at temperatures above 1600°C, study of the electrical properties, fabrication of porous and dense composites.

4. **AM3AC2A (Protocollo 0001421/2022)**
   Istituto di Scienza, Tecnologia e Sostenibilità dei Materiali Ceramici (ISSMC – CNR), Faenza (Italia)
   30/10/2020 – 17/07/2023
   Key personnel in the ASI funded project "Am3aC2a" (Multi-scale approach for modelling CMC and UHTCMC materials, Development of models for damage and failure of carboceramics components, duration: 3 years), led by project leader Alessandro Airoldi, in co-participation of Diletta Sciti.
   Role: powder processing via wet ball milling, preparation of water-based slurries, planning of activities for the fabrication of large scale composites via slurry infiltration and sintering via hot pressing, microstructure and composition characterization via SEM/EDS/XRD, mechanical characterization (flexural strength, fracture toughness).

5. **C3HARME (Protocollo 0002545/2018, 0000155/2021)**
   Istituto di Scienza, Tecnologia e Sostenibilità dei Materiali Ceramici (ISSMC – CNR), Faenza (Italia)
   01/06/2016 – 31/05/2020
   Key personnel and full-time involvement in the European project n°685594, H2020 "C3HARME" (Next Generation Ceramic Composites For Combustion Harsh Environments And Space, duration: 4 years), led by project leader Diletta Sciti.
   Role: powder processing via dry and wet ball milling, rheology studies on the ceramic suspensions, preparation of water-based slurries, development of a slurry infiltration process for carbon fibre preforms with varying modulus, sintering of ceramic composites via hot pressing, microstructure and composition characterization via SEM/EDS/XRD, mechanical characterization (flexural strength, fracture toughness) from room temperature up to 2100°C in dedicated facilities, study of the oxidation behaviour from room temperature up to 2200°C, study of the thermal properties, scale up of the process (from Ø = 30 mm to 400 mm, from h = 2 mm to 150 mm), preparation of prototypes for testing in relevant environment (TRL = 5/6)

PREMI E RICONOSCIMENTI

1. **Migliore presentazione orale a conferenza ECI 2024**
   14/04/2024 – 19/04/2024
   Premiazione per la migliore presentazione orale a "Ultra-High Temperature Ceramics: Materials for Extreme Environment Applications VI" a Giardini Naxos 2024 e vincitore di un premio finanziato dal JECS Trust. **Fondi:** 500€

2. **Grant per attività di ricerca presso German Aerospace Center (DLR)**
   15/06/2023 – 15/08/2023
   Vincitore di un grant finanziato dal JECS Trust per lo svolgimento di attività di ricerca presso il Deutsches Zentrum für Luft- und Raumfahrt (DLR) di Köln (Germania) sulla deposizione di coating a base di Nb su UHTCMC. N° Contratto 2023341. **Fondi:** 4500 €

3. **Grant per partecipazione a conferenza HT-CMC19**
   22/09/2019 – 26/09/2019
   Vincitore di un grant finanziato dal JECS Trust per la partecipazione alla "10th International Conference on High Temperature Ceramic Matrix Composites" a Bordeaux (Francia). **Fondi:** 500 €

4. **2° migliore presentazione orale & Grant per partecipazione a conferenza ECERS19**
   17/06/2019 – 20/06/2019
   Premiazione per la 2° migliore presentazione orale al "Workshop for Young Ceramists" a Bologna 2018, e vincitore di un grant finanziato dal JECS Trust per la partecipazione alla "European Ceramic Society

conference" a Torino (Italia). **Fondi:** 750€

5. **Grant per partecipazione a conferenza e workshop ICACC19**
   27/01/2019 – 31/01/2019
   Vincitore di un grant finanziato dal JECS Trust per la partecipazione al "Winter Workshop" e alla "International Conference of the American Ceramic Society" a Daytona Beach (Florida). N° Contratto 2016124-23. **Fondi:** 1200 €

6. **Grant per partecipazione a conferenza e workshop ICACC18**
   21/01/2018 – 26/01/2018
   Vincitore di un grant finanziato dal JECS Trust per la partecipazione al "Winter Workshop" e alla "International Conference of the American Ceramic Society" a Daytona Beach (Florida). N° Contratto 2016124-10. **Fondi:** 1200 €

7. **Grant per partecipazione a conferenza e workshop ICACC18**
   21/01/2018 – 26/01/2018
   Vincitore di un grant finanziato dall'American Ceramic Division per la partecipazione alla "International Conference of the American Ceramic Society" a Daytona Beach (Florida). **Fondi:** 175 $

8. **Grant per partecipazione a conferenza ECI**
   17/09/2017 – 20/09/2017
   Vincitore di un grant finanziato dal JECS Trust per la partecipazione alla "Engineering Conference International: Ultra-high temperature ceramics - Materials for extreme environment applications IV" a Windsor (UK). **Fondi:** 500 €

9. **Grant per attività di ricerca a MS&T**
   20/07/2017 – 16/08/2017
   Vincitore di un grant finanziato dal JECS Trust per lo svolgimento di attività di ricerca presso il "Missouri University of Science & Technology" di Rolla (MO), sulla caratterizzazione termo-meccanica di UHTCMCs con matrice a base di carburi. **Fondi:** 2800 €

10. **Grant per partecipazione a workshop WGCC**
    28/09/2016 – 30/09/2016
    Vincitore di un grant finanziato dal JECS Trust per la partecipazione al "Workshop on Graphene/Ceramic Composites", a Cuenca (Spagna). **Fondi:** 150 €

DIDATTICA

1. **Co-supervisione dello studente Bartolomeo Zanardi per il corso di dottorato in "Scienza e Tecnologia dei Materiali" dell'università di Parma - Tesi: Fabrication processes for UHTCMCs via non-sintering techniques**
   Università di Parma (in convenzione con ISTEC – CNR)
   01/11/2023 – in corso

2. **Tutorato (45h) di "Chimica generale ed inorganica con lab." del 1° anno di LT in "Chimica e Tecnologie per l'ambiente ed i Materiali"**
   Università di Bologna (sede di Faenza)
   01/10/2024 – 24/01/2025

3. **Tutorato (36h) di "Chimica generale ed inorganica con lab." del 1° anno di LT in "Chimica e Tecnologie per l'ambiente ed i Materiali"**
   Università di Bologna (sede di Faenza)
   01/10/2023 – 24/01/2024

4. **Tutorato (36h) di "Chimica generale ed inorganica con lab." del 1° anno di LT in "Chimica e Tecnologie per l'ambiente ed i Materiali"**
   Università di Bologna (sede di Faenza)
   01/10/2022 – 18/01/2023

5. **Co-supervisione dello studente Matteo Mor per il corso di dottorato in "Scienza e Tecnologia dei Materiali" dell'università di Parma - Tesi: Fabrication and characterization of UHTCMCs for tribological applications**
   Università di Parma (in convenzione con ISTEC – CNR)
   01/11/2019 – 19/05/2023

6. **Lezione (1h) su "High temperature corrosion of ceramic materials" per il corso di "Degrado e Protezione dei materiali ad alta temperatura" del 2° anno di LM in "Ingegneria dei Materiali"**
   Università di Ferrara
   13/12/2022

7. **Lezione (1h) su "High temperature corrosion of ceramic materials" per il corso di "Degrado e Protezione dei materiali ad alta temperatura" del 2° anno di LM in "Ingegneria dei Materiali"**
   Università di Ferrara
   18/05/2022

8. **Lezione (1h) su "Ultra-high temperature ceramic (UHTC) composites for aerospace" per il corso "Processi ed applicazioni dei materiali polimerici e ceramici" del dottorato in "Chimica"**
   Università di Bologna
   6/06/2022

PUBBLICAZIONI

38 articoli in riviste peer-review, **1** capitolo di libro, **5** conference proceedings, **1** brevetto, **4** rapporti tecnici

N° citazioni: 1252 (scopus, 8/08/2025)

H-index: 23 (scopus, 8/08/2025)

ARTICOLI SU RIVISTE PEER-REVIEW (* = corresponding author)

1. **Effect of WC addition on the mechanical properties and oxidation resistance of ZrB2/SiC-based UHTCMCs**
   International Journal of Applied Ceramic Technology, 2025, July
   Antonio Vinci, Matteo Mor, Luca Zoli, Diletta Sciti
   https://doi.org/10.1111/ijac.70031
   Role: fabrication and testing of the ceramic composites, microstructure, mechanical and oxidation resistance characterization, writing and review editing

2. **Novel CMCs based on B4C-TiB2 blends and carbon fibres**
   Journal of the European Ceramic Society, 2025, 45(10), 117355
   Antonio Vinci, Matteo Mor, Simone Failla, Pietro Galizia, Luca Zoli, Diletta Sciti

https://doi.org/10.1016/j.jeurceramsoc.2025.117355
Role: fabrication of the ceramic composites, thermodynamic calculations, microstructural characterization, writing and review editing

3. **Elevated temperature performance: Arc-jet testing of carbon fiber reinforced ZrB2 bars up to 2200 °C for strength retention assessment**
Journal of Advanced Ceramics, 2025, 14, 9221022
Diletta Sciti, Antonio Vinci*, Luca Zoli, Pietro Galizia, Matteo Mor, William Fahrenholtz, Stefano Mungiguerra, Raffaele Savino, Antonio Maria Caporale, Alessandro Airoldi
https://doi.org/10.26599/JAC.2024.9221022
Role: fabrication of the ceramic composites, oxidation testing, thermodynamic calculations, microstructural characterization, writing and review editing

4. **Dry tribological behavior of 0/90° continuous carbon fiber reinforced ZrB2 based UHTC-material**
Journal of the European Ceramic Society, 2024, 44(14), 116664
Matteo Mor, Matthias Meiser, Nico Langhof, Antonio Vinci, Luca Zoli, Bettina Alber-Laukant, Stephan Tremmel, Stefan Schaffoener, Diletta Sciti
https://doi.org/10.1016/j.jeurceramsoc.2024.06.005
The tribological properties of ZrB2/SiC-based UHTCMCs were tested in dry conditions against a steel and C/C-SiC disk. The friction coefficients were measured and the friction films analysed to correlate the properties observed with the microstructure.
Role: fabrication of the ceramic composites, microstructural characterization, writing and review editing

5. **A bi-phasic numerical approach for non-linear response and stiffness recovery related to residual thermal stress in UHTCMCs**
Journal of the European Ceramic Society, 2024, 44(10), pp. 5579-5589
Antonio Maria Caporale, Pietro Galizia, Bartolomeo Zanardi, Antonio Vinci, Diletta Sciti, Alessandro Airoldi
https://doi.org/10.1016/j.jeurceramsoc.2024.03.038
A simplified analytical model was developed to predict the behaviour of residual thermal stresses on ZrB_2-based UHTCMCs. Tensile tests were carried out on different laminating sequences, and the model's efficacy in capturing the non-linear response of the unidirectional and cross ply lay-ups was demonstrated.
Role: fabrication of the ceramic composites, microstructural characterization, writing and review editing

6. **Processing and oxidation resistance at 1650°C of ZrB2-based UHTCMCs with short fibre gradients**
Journal of the European Ceramic Society, 2024, 44(7), pp. 4536-4548
Matteo Mor, Antonio Vinci, Diletta Sciti
https://doi.org/10.1016/j.jeurceramsoc.2024.01.099
IF: 5.7, **Cit.:** 0
Functionally graded composites with fibre gradients were prepared and characterized at 1650°C in air. Three different compositions (ZrB_2-SiC-Y_2O_3, ZrB_2-$MoSi_2$, SiC-Y_2O_3), The composite layers were perfectly joined at the interface with no visible defects and no spallation phenomena were observed following oxidation. ZrB_2-$MoSi_2$ emerged as the most effective composition thanks to the formation of a compact ZrO_2-SiO_2 scale.
Role: microstructural characterization, thermodynamic simulations, writing and review editing

7. **ZrB_2-SiC ceramics toughened with oriented paper-derived graphite for a sustainable approach**
Journal of Advanced Ceramics, 2024, 13(2), pp. 207-219
Luca Zoli, Francesca Servadei, Simone Failla, Matteo Mor, Antonio Vinci, Pietro Galizia, Diletta Sciti
https://doi.org/10.26599/JAC.2024.9220842

IF: 16.9, **Cit.**: 0
UHTCMCs reinforced with paper-derived graphite were produced and mechanically characterized. The values of strength and fracture toughness obtained were comparable to those of short carbon fibre reinforced composites, showing how cheaper carbon sources can be used for the reinforcement of such material.
Role: fabrication of the ceramic composite, microstructural characterization, writing and review editing

8. **From outer space to inside the body: Ultra-high temperature ceramic matrix composites for biomedical applications**
Journal of the European Ceramic Society, 2024, 44(2), pp. 729-737
Luca Zoli, Francesca Servadei, Giada Bassi, Arianna Rossi, Monica Montesi, Antonio Vinci, Diletta Sciti, Silvia Panseri
https://doi.org/10.1016/j.jeurceramsoc.2023.10.007
IF: 5.7, **Cit.**: 2
UHTCMCs, originally designed for the application in extreme environments, have been considered for the use as biomaterials due to their excellent mechanical properties coupled with chemical inertness. A preliminary biological in vitro study demonstrated materials' lack of cytotoxicity, making them promising candidates for further investigation for biomedical purposes.
Role: preparation of the ceramic composites, microstructural characterization, writing and review editing

9. **Tribological behavior of carbon fiber reinforced ZrB2 based ultra high temperature ceramics**
Journal of the European Ceramic Society, 2023, 43(13), pp. 5413–5424
Matteo Mor, Matthias Meiser, Nico Langhof, Antonio Vinci, Simone Failla, Bettina Alber-Laukant, Stephan Tremmel, Stefan Schaffoener, Diletta Sciti
https://doi.org/10.1016/j.jeurceramsoc.2023.05.019
IF: 5.7, **Cit.**: 0
The tribological behaviour of ultra-high temperature ceramic matrix composites (UHTCMCs) was investigated. The high values of coefficient of friction obtained (0.5–0.7), their stability during the braking and the low wear rate make these materials appealing for automotive brake applications.
Role: preparation of reference specimens, microstructural characterization, supervision of the research activity, writing and review editing

10. **Propulsion tests on ultra-high-temperature ceramic matrix composites for reusable rocket nozzles**
Journal of Advanced Ceramics, 2023, 12(7): 1345-1360
Diletta Sciti, Antonio Vinci*, Luca Zoli, Pietro Galizia, Simone Failla, Stefano Mungiguerra*, Giuseppe D. Di Martino, Anselmo Cecere, Raffaele Savino
https://doi.org/10.26599/JAC.2023.9220759
IF: 16.9, **Cit.**: 0
Three nozzle prototypes, obtained by sintering, were tested 2–3 times in a hybrid rocket motor for proving reusability. These tests demonstrated the capability of complex-shaped prototypes made of UHTCMCs to survive repeated exposure to environments representative of a realistic space propulsion application without any failure nor measurable erosion.
Role: fabrication of the fibre reinforced UHTC composites, microstructural characterization, writing of the paragraphs on processing, microstructure, oxidation resistance, review editing

11. **Melt/solid interaction and melt super-saturation effect on the microstructure asset of ultra-refractory composites prepared by reactive melting infiltration**
Journal of Alloys and Compounds, 2023, 947, 169521
Laura Silvestroni, Antonio Vinci, Nicola Gilli, Luca Zoli, Diletta Sciti, Dietmar Koch, Marius Kuetemeyer
https://doi.org/10.1016/j.jallcom.2023.169521
IF: 6.2, **Cit.**: 0

The reactions occurring between a Zr_2Cu melting phase and ZrB2 are first explored through sessile drop tests, confirming a promising infiltration capability of the melt. The local B-rich environment promoted the development of a dual-phase microstructure within the matrix composed of new sub-micrometric grains and of larger ZrB_2 grains, partially dissolved in the melt and re-precipitated acquiring a nano-sized lamellar eutectic structure.
Role: fabrication of the fibre reinforced UHTC composites by reactive melt infiltration, microstructural analysis

12. **Experimental characterization of fatigue life of ZrB_2-SiC based ultra high-temperature ceramic matrix composites**
International Journal of Fatigue, 2023, 168, 107389
Thomas Reimer, Giuseppe Di Martino, Diletta Sciti, Luca Zoli, Pietro Galizia, Antonio Vinci, Miguel Lagos, N. Azurmendi
https://doi.org/10.1016/j.ijfatigue.2022.107389
IF: 6.0, **Cit.**: 0
The fatigue life of the material plays a fundamental role in the design, determining their resistance to typical vibrational loads. Two different methodologies are proposed and applied to new ZrB_2-SiC-based UHTCMCs, with either short or long fibres, leading, in combination with numerical analyses, to the determination of the σ/N curve for these materials.
Role: fabrication of the fibre reinforced UHTC composites, microstructural characterization

13. **Synthesis, microstructure and mechanical properties of lamellar YB_2C_2 – based ultra-high temperature ceramic composites**
Journal of the European Ceramic Society, 2023, 43(3), pp. 831–841
Antonio Vinci*, Luca Zoli, Laura Silvestroni, Nicola Gilli, Diletta Sciti
https://doi.org/10.1016/j.jeurceramsoc.2022.10.072
IF: 5.7, **Cit.**: 1
YB_2C_2 phases were synthesized by powder synthesis from different boron sources (B, BN, B_4C, B_2O_3). With the most promising mixture (B_4C), a fibre reinforced composite made entirely by YB_2C_2 ceramic matrix was fabricated and tested, achieving strengths above 380 MPa.
Role: selection of the powder mixtures, powder synthesis, fabrication of the fibre reinforced composites, microstructural characterization, writing of the original draft and review editing

14. **Elevated temperature tensile and bending strength of ultra-high temperature ceramic matrix composites obtained by different processes**
Journal of the European Ceramic Society, 2023
Pietro Galizia, Diletta Sciti, Jon Binner, Vinothini Venkatachalam, Miguel Lagos, Francesca Servadei, Antonio Vinci, Luca Zoli, Thomas Reimer
https://doi.org/10.1016/j.jeurceramsoc.2023.03.055
IF: 5.7, **Cit.**: 0
The high temperature mechanical behaviour of different UHTC composites was investigated and the properties compared, showing how the slurry infiltration process is the most promising for the fabrication of these materials.
Role: fabrication of the fibre reinforced UHTC composites, microstructural characterization

15. **A novel approach for manufacturing of layered, ultra-refractory composites using pliable, short fibre-reinforced ceramic sheets**
Journal of Advanced Ceramics, 2023, 12(1), pp. 155–168
Matteo Mor, Antonio Vinci, Simone Failla, Pietro Galizia, Luca Zoli, Diletta Sciti
https://doi.org/10.26599/JAC.2023.9220674
IF: 16.9, **Cit.**: 2

A novel fabrication process of short fibre reinforced UHTC composites was developed. Specimens were microstructurally and mechanically tested, showing comparable results to state of the art composites, with the advantage of a flexible, fast and green process.
Role: preparation of reference specimens, microstructural characterization, supervision of the research activity, writing and review editing

16. **Advancements in carbon fibre reinforced ultra-refractory ceramic composites: Effect of rare earth oxides addition**
Composites Part A: Applied Science and Manufacturing, 2022, 156, 106858
Antonio Vinci*, Laura Silvestroni, Nicola Gilli, Luca Zoli, Diletta Sciti
https://doi.org/10.1016/j.compositesa.2022.106858
IF: 8.7, **Cit.**: 7
The addition of rare earth (RE) oxides to carbon fibre-ZrB_2/SiC composites led to the formation of novel lamellar phases at the fibre interface, achieving strengths and toughness above 330 MPa and 9 MPa $m^{0.5}$, respectively, and strengths above 600 MPa at 1500 °C.
Role: preparation of the suspensions for the fabrication of UHTC composites, choice of the RE oxides additives, microstructural characterization, writing of the original draft and review editing.

17. **A systematic approach for horizontal and vertical scale up of sintered Ultra-High Temperature Ceramic Matrix Composites for aerospace – Advances and perspectives**
Composites Part B: Engineering, 2022, 234, 109709
Diletta Sciti, Luca Zoli, Thomas Reimer, Antonio Vinci, Pietro Galizia
https://doi.org/10.1016/j.compositesb.2022.109709
IF: 13.1, **Cit.**: 17
This paper illustrates the systematic approach adopted for the scale-up of UHTCMCs based on carbon fibre reinforced ZrB_2/SiC composites from laboratory to industrial scale dimensions. The scale-up process covered a period of three years and concerned an increase in diameter of ~10 times (from 40 to 400 mm), and in thickness of ~30 times (from 5 to 160 mm).
Role: planning of activities to process over 10 kg of powders and infiltrate 12 m2 of carbon fibres in the frame of few weeks, overlapping over 600 layers of materials for the production of large specimens, microstructure analysis and homogeneity check, writing and review editing of the experimental and microstructure paragraphs.

18. **Ablation behaviour of carbon fibre ultra-high temperature composites at oblique angles of attack**
Materials & Design, 2021, 212, 110199
Ben Baker, Vinothini Venkatachalam, Luca Zoli, Antonio Vinci, Simone Failla, Diletta Sciti, Jon Binner
https://doi.org/10.1016/j.matdes.2021.110199
IF: 8.4, **Cit.**: 4
Oxyacetylene torch testing was performed at a range of angles of attack on Cf/ZrB_2-SiC-Y_2O_3 composites, from 10° to 90°. The ablation behaviour was studied in-situ with thermography, and the post-ablation morphologies investigated optically and with elemental analysis.
Role: preparation of ad hoc ceramic suspensions for the fabrication of UHTC composites with high solid loadings, microstructure analysis, writing and review editing of the processing and microstructure paragraphs.

19. **Retained strength of UHTCMCs after oxidation at 2278 K**
Composites Part A: Applied Science and Manufacturing, 2021, 149, 106523
Pietro Galizia, Antonio Vinci*, Luca Zoli, Frederic Monteverde, Jon Binner, Vinothini Venkatachalam, Miguel Lagos, Thomas Reimer, Neraj Jain, Diletta Sciti
https://doi.org/10.1016/j.compositesa.2021.106523
IF: 8.7, **Cit.**: 11
In the frame of Horizon 2020 European C3HARME research project, the manufacture of ZrB2-based CMCs was developed through different processes: slurry infiltration and sintering, radio frequency

chemical vapour infiltration (RF-CVI) and reactive metal infiltration (RMI). To assess the high temperature stability, the microstructure and mechanical properties after oxidation were investigated.
Role: preparation of ceramic suspensions for the fabrication of UHTC composites via slurry infiltration and sintering, microstructure analysis of all specimens before and after testing, writing and review editing of the processing, microstructure and mechanical properties paragraphs.

20. **Significant improvement of the self-protection capability of ultra-high temperature ceramic matrix composites**
Corrosion Science, 2021, 189, 109575
Francesca Servadei, Luca Zoli, Antonio Vinci, Pietro Galizia, Diletta Sciti
https://doi.org/10.1016/j.corsci.2021.109575
IF: 8.3, **Cit.:** 16
The oxidation behaviour of Cf/ZrB_2-SiC with different fibre architectures, manufactured by slurry impregnation, polymer infiltration and mild pyrolysis, was investigated. Results indicated that a good dispersion of ZrB_2 particles in the polymer derived SiC(O) matrix promoted the formation of compact scales, providing a good compromise between weight and oxidation resistance.
Role: preparation of the ceramic suspensions, supervision of the slurry infiltration process, microstructure analysis and image analysis on the polished specimens, writing and review editing of the processing and microstructure paragraphs.

21. **Properties of large scale ultra-high temperature ceramic matrix composites made by filament winding and spark plasma sintering**
Composites Part B: Engineering, 2021, 216, 108839
Diletta Sciti, Pietro Galizia, Thomas Reimer, Achim Schoberth, Carlos Gutiérrez-Gonzalez, Laura Silvestroni, Antonio Vinci, Luca Zoli
https://doi.org/10.1016/j.compositesb.2021.108839
IF: 13.1, **Cit.**: 23
This work was the result of a long term collaboration between different institutions on the scale-up of the production process of UHTCMCs for the fabrication of large components. 150 mm large discs were produced by filament winding and consolidated by spark plasma sintering and mechanically tested.
Role: preparation of the ceramic suspensions, supervision of the filament winding machine, cutting, shaping and assembly of the infiltrated fibre layers, microstructure analysis and homogeneity check, writing and review editing of the experimental and microstructure paragraphs.

22. **Influence of pressure on the oxidation resistance of carbon fiber reinforced ZrB_2/SiC composites at 2000 and 2200°C**
Corrosion Science, 2021, 184, 109377
Antonio Vinci*, Thomas Reimer, Luca Zoli, Diletta Sciti
https://doi.org/10.1016/j.corsci.2021.109377
IF: 8.3, **Cit.**: 12
The influence of pressure on the oxidation resistance of C-ZrB2/SiC composites was studied. Materials were tested in air at 2000–2200 °C at 1–900 mbar. SiC increase was beneficial up to 1650 °C, then the trend was inverted.
Role: planning of activities at DLR, fabrication of UHTC composites via slurry infiltration and sintering, manual assembly of the ZrO_2 oxidation chamber, supervision of the oxidation tests, microstructure analysis before and after testing, writing of the original draft and review editing.

23. **Effect of PAN-based and pitch-based carbon fibres on microstructure and properties of continuous Cf/ZrB_2-SiC UHTCMCs**
Journal of the European Ceramic Society, 2021, 41(5), pp. 3045–3050
Diletta Sciti, Luca Zoli, Antonio Vinci, Laura Silvestroni, Stefano Mungiguerra, Pietro Galizia
https://doi.org/10.1016/j.jeurceramsoc.2020.05.032
IF: 5.7, **Cit.**: 35

The microstructure and mechanical properties of two different Cf/ZrB2-SiC composites reinforced with continuous PyC coated PAN-derived fibres or uncoated pitch-derived fibres were compared. The former provided higher strengths and damage tolerance but lower interlaminar shear and off-axis strength.
Role: preparation of the ceramic suspensions, fabrication of the UHTC composites via slurry infiltration and sintering, microstructure analysis, writing and review editing of the experimental and microstructure paragraphs.

24. **Influence of Y_2O_3 addition on the mechanical and oxidation behaviour of carbon fibre reinforced ZrB_2/SiC composites**
Journal of the European Ceramic Society, 2020, 40(15), pp. 5067–5075
Antonio Vinci*, Luca Zoli, Pietro Galizia, Diletta Sciti
https://doi.org/10.1016/j.jeurceramsoc.2020.06.043
IF: 5.7, **Cit.**: 26
The influence of Y_2O_3 addition on the microstructure, thermo-mechanical properties and oxidation resistance of carbon fibre reinforced ZrB_2/SiC composites was investigated. Y_2O_3 reacted with oxides impurities and carbon to form novel phases and lower the sintering temperature. Mechanical properties were significantly enhanced but protection against oxygen diffusion was limited due to the partial consumption of SiC.
Role: preparation of the ceramic suspensions, fabrication of the UHTC composites, microstructure analysis, mechanical properties investigation, oxidation study, writing of the original draft and review editing.

25. **Development of UHTCMCs via water based ZrB_2 powder slurry infiltration and polymer infiltration and pyrolysis**
Journal of the European Ceramic Society, 2020, 40(15), pp. 5076–5084
Francesca Servadei, Luca Zoli, Pietro Galizia, Antonio Vinci, Diletta Sciti
https://doi.org/10.1016/j.jeurceramsoc.2020.05.054
IF: 5.7, **Cit.**: 23
Cf/ZrB_2-SiC ultra-high temperature composites were manufactured via aqueous slurry impregnation coupled with polymer infiltration and pyrolysis. Mechanical properties showed the tendency to decrease with increase of the preforms complexity, due to the higher amount of flaws and residual stresses. The materials showed an optimal resistance to oxidation at 1650 °C.
Role: preparation of the ceramic suspensions, supervision of the slurry infiltration process, microstructure analysis, writing and review editing of the microstructure paragraph.

26. **18) Reactive melt infiltration of carbon fibre reinforced ZrB_2/B composites with Zr_2Cu**
Composites Part A: Applied Science and Manufacturing, 2020, 137, 105973
Antonio Vinci*, Luca Zoli, Pietro Galizia, Marius Kuetemeyer, Dietmar Koch, Diletta Sciti
https://doi.org/10.1016/j.compositesa.2020.105973
IF: 8.7, **Cit.**: 22
The microstructure and mechanical properties of carbon fibre reinforced ZrB_2 composites produced by slurry infiltration and consolidated by reactive melt infiltration were investigated. The flexural strength increased with the increase of boron content and the mechanical behaviour was mostly dominated by matrix properties.
Role: design of the experiments during my period abroad at DLR labs, preparation of the ceramic suspensions, fabrication of the UHTC green composites, supervision of the reactive melt infiltration furnace, microstructure analysis, mechanical properties investigation, writing of the original draft and review editing.

27. **Is spark plasma sintering suitable for the densification of continuous carbon fibre - UHTCMCs?**
Journal of the European Ceramic Society, 2020, 40(7), pp. 2597–2603
Luca Zoli, Antonio Vinci, Pietro Galizia, Carlos Gutiérrez-Gonzalez, Sergio Rivera, Diletta Sciti
https://doi.org/10.1016/j.jeurceramsoc.2019.12.004

IF: 5.7, **Cit.**: 25
Materials were produced by hot pressing as baseline samples and then by spark plasma sintering (SPS) to compare microstructure and basic mechanical properties. A special emphasis was given to the study of interfaces, in case of both coated and uncoated carbon fibres. SPS allowed for faster sintering but required an adjustment of the temperature to avoid fibre degradation.
Role: preparation of the ceramic suspensions, fabrication of the composites via slurry infiltration and hot pressing, microstructure analysis, writing and review editing of the microstructure paragraph.

28. **Influence of fibre content on the strength of carbon fibre reinforced HfC/SiC composites up to 2100 °C**
Journal of the European Ceramic Society, 2019, 39(13), pp. 3594–3603
Antonio Vinci*, Luca Zoli, Diletta Sciti, Jeremy Watts, Gregory Hilmas, William G. Fahrenholtz
https://doi.org/10.1016/j.jeurceramsoc.2019.04.049
IF: 5.7, **Cit.**: 27
The influence of carbon fibre content on the mechanical behaviour of HfC/SiC composites was investigated up to 2100 °C for specimens containing 40 or 55 vol% fibres. The specimen containing a higher fibre content underwent significant deformation due to low interfacial strength between the fibre plies.
Role: preparation of the ceramic suspensions, fabrication of the composites via slurry infiltration and hot pressing, microstructure analysis, mechanical characterization at high temperature with a dedicated special furnace at MS&T, writing of the original draft and review editing.

29. **Ablation behaviour of ultra-high temperature ceramic matrix composites: Role of MeSi2 addition**
Journal of the European Ceramic Society, 2019, 39(9), pp. 2771–2781
Laura Silvestroni, Antonio Vinci, Simone Failla, Luca Zoli, Virtudes Rubio, Jon Binner, Diletta Sciti
https://doi.org/10.1016/j.jeurceramsoc.2019.03.031
IF: 5.7, **Cit.**: 24
A new class of ZrB2 composites reinforced with 40 vol% C short fibers and containing 5 vol% SiC in combination with 5 vol% MoSi2, HfSi2 or WSi2 successfully withstood extreme conditions in a oxyacetylene torch. Unlike HfSi2, MoSi2 and WSi2 formed highly volatile oxides on the surface, which did not offer better protection than the ZrO2-SiO2 scale that developed in the baseline.
Role: microstructure analysis before and after testing, image analysis, writing of the microstructure paragraph.

30. **Arc-jet wind tunnel characterization of ultra-high-temperature ceramic matrix composites**
Corrosion Science, 2019, 149, pp. 18–28
Stefano Mungiguerra, Giuseppe Di Martino, Anselmo Cecere, Raffaele Savino, Laura Silvestroni, Antonio Vinci, Luca Zoli, Diletta Sciti
https://doi.org/10.1016/j.corsci.2018.12.039
IF: 8.3, **Cit.**: 49
Two samples of Ultra-High-Temperature Ceramic Matrix Composites, with carbon fibers in a ZrB_2-SiC matrix, were exposed to supersonic dissociated air flow, simulating the atmospheric re-entry environment, in an arc-heated facility at specific total enthalpies up to 20 MJ/kg. A zirconium oxide layer formed on the surface, below which the original material is perfectly preserved.
Role: preparation of the ceramic suspensions, fabrication of the composites via slurry infiltration and hot pressing, microstructure analysis, writing of the processing and microstructure paragraph.

31. **Mechanical behaviour of carbon fibre reinforced TaC/SiC and ZrC/SiC composites up to 2100°C**
Journal of the European Ceramic Society, 2019, 39(4), pp. 780–787
Antonio Vinci*, Luca Zoli, Diletta Sciti, Jeremy Watts, Gregory Hilmas, William G. Fahrenholtz
https://doi.org/10.1016/j.jeurceramsoc.2018.11.017
IF: 5.7, **Cit.**: 51

The microstructure and high temperature mechanical properties of continuous carbon fibre reinforced ZrC and TaC composites were investigated. The flexural strength increases by 30% from room temperature to 1500 °C, which was attributed to stress relaxation. At 1800 °C, the strength decreases by 10% and at 2100 °C plastic deformation occurs, which resulted in lower yield strength but higher ultimate strength.
Role: preparation of the ceramic suspensions, fabrication of the composites via slurry infiltration and hot pressing, microstructure analysis, mechanical characterization at high temperature with a dedicated special furnace during the stage at MS&T, writing of the original draft and review editing.

32. **Toughening effect of non-periodic fiber distribution on crack propagation energy of UHTC composites**
Journal of Alloys and Compounds, 2019, 777, pp. 612–618
Simone Failla, Pietro Galizia, Luca Zoli, Antonio Vinci, Diletta Sciti
https://doi.org/10.1016/j.jallcom.2018.11.043
IF: 6.2, **Cit.**: 20
Different configurations of continuous carbon fibre-reinforced UHTC composites were fabricated by using electrophoretic deposition (EPD) and slurry infiltration. Non-periodic fibre distribution induced by the EPD process led to an increase in fracture toughness and a slight decrease of flexural strength.
Role: preparation of the ceramic suspensions, fabrication of the composites via slurry infiltration and hot pressing, microstructure analysis, writing of the processing and microstructure paragraphs.

33. **On the thermal shock resistance and mechanical properties of novel unidirectional UHTCMCs for extreme environments**
Scientific Reports, 2018, 8(1), 9148
Luca Zoli, Antonio Vinci, Pietro Galizia, Cesare Melandri, Diletta Sciti
https://doi.org/10.1038/s41598-018-27328-x
IF: 4.6, **Cit.**: 68
Carbon fibre reinforced ZrB_2/SiC composites were fabricated and mechanically tested, and were able to sustain a thermal shock severity as high as 1500 °C. The maximum decrease of strength at 1400 °C was 16% of the initial value, indicating that the samples could be shocked at even higher temperature.
Role: preparation of the ceramic suspensions, fabrication of the composites via slurry infiltration and hot pressing, microstructure analysis, writing of the processing and microstructure paragraphs.

34. **Introduction to H2020 project C3HARME–next generation ceramic composites for combustion harsh environment and space**
Advances in Applied Ceramics, 2018, 117(sup1), pp. s70–s75
Diletta Sciti, Laura Silvestroni, Frederic Monteverde, Antonio Vinci, Luca Zoli
https://doi.org/10.1080/17436753.2018.1509822
IF: 2.2, **Cit.**: 35
This paper aims at giving an introduction to the challenges addressed by C3HARME project including (i) the integration between well-established and novel techniques for CMCs and UHTCs production, (ii) the need for very high temperature characterisation, (iii) the meaning of self-healing capability for UHTCMCs, (iv) the contribution of modelling to materials development and (V) the investigation of the microstructure/thermo-mechanical property correlations.
Role: writing of the introduction paragraph, review editing.

35. **Influence of SiC content on the oxidation of carbon fibre reinforced ZrB_2/SiC composites at 1500 and 1650 °C in air**
Journal of the European Ceramic Society, 2018, 38(11), pp. 3767–3776
Antonio Vinci*, Luca Zoli, Diletta Sciti
https://doi.org/10.1016/j.jeurceramsoc.2018.04.064
IF: 5.7, **Cit.**: 34

The microstructure and the oxidation resistance in air of continuous carbon fibre reinforced ZrB_2–SiC ceramic composites were investigated. Contents above 15 vol.% SiC ensure the formation of a homogeneous protective borosilicate glass that covers the entire sample and minimizes fibre burnout.
Role: preparation of the ceramic suspensions, fabrication of the composites via slurry infiltration and hot pressing, supervision of the oxidation tests, microstructure analysis before and after testing, writing of the original draft and review editing.

36. **Understanding the mechanical properties of novel UHTCMCs through random forest and regression tree analysis**
Materials and Design, 2018, 145, pp. 97–107
Antonio Vinci*, Luca Zoli, Diletta Sciti, Cesare Melandri, Stefano Guicciardi
https://doi.org/10.1016/j.matdes.2018.02.061
IF: 8.4, **Cit.**: 39
The microstructure and the mechanical properties of carbon fibre reinforced ZrB_2/SiC composites were investigated by varying the SiC and fibre amounts. The statistical analysis demonstrated that among the possible explanatory variables such as porosity, amount of SiC, fibre content, matrix content, SiC/fibre amount ratio, the one having a major influence on both the flexural strength and fracture toughness is the ratio between SiC and carbon fibre content.
Role: preparation of the ceramic suspensions, fabrication of over 10 composites via slurry infiltration and hot pressing, microstructure analysis, mechanical characterization, writing of the original draft and review editing.

37. **Oxidation behaviour of a continuous carbon fibre reinforced ZrB2/SiC composite**
Corrosion Science, 2017, 123, pp. 129–138
Antonio Vinci*, Luca Zoli, Elena Landi, Diletta Sciti
https://doi.org/10.1016/j.corsci.2017.04.012
IF: 8.3, **Cit.**: 53
The oxidation behaviour in air of carbon fibre reinforced ZrB_2/SiC was investigated via TGA from room temperature to 1500°C. Below 1000 °C the kinetics was dominated by an exponential weight loss due to fibre consumption. Above 1000 °C, weight loss started to be significantly counterbalanced by weight gain due to the formation of a layer of SiO_2 and B_2O_3. Kinetic parameters were evaluated.
Role: preparation of the ceramic suspensions, fabrication of the composites via slurry infiltration and hot pressing, microstructure analysis, oxidation study, kinetic equations extrapolation and curve fitting, writing of the original draft and review editing.

38. **Rapid spark plasma sintering to produce dense UHTCs reinforced with undamaged carbon fibres**
Materials and Design, 2017, 130, pp. 1–7
Luca Zoli, Antonio Vinci, Laura Silvestroni, Diletta Sciti, Mike Reece, Salvatore Grasso
https://doi.org/10.1016/j.matdes.2017.05.029
IF: 8.4, **Cit.**: 30
Short fibre reinforced ZrB_2/SiC composites were produced by ball-milling and rapid Spark Plasma Sintering (SPS) Careful control of the sintering parameters, such as the heating rate, dwell temperature and holding time are required to produce a fully dense matrix and avoid fibre degradation.
Role: processing of the powders via ball-milling, writing of the processing and microstructure

CAPITOLI DI LIBRO (* = corresponding author)

1. **Ultra-High Temperature Ceramic Matrix Composites**
Encyclopedia of Materials: Technical Ceramics and Glasses, 2021, 2-3, pp. 340–352
Luca Zoli, Diletta Sciti, Antonio Vinci, Simone Failla, Laura Silvestroni
https://doi.org/10.1016/B978-0-12-818542-1.00023-0
Cit.: 9
Ultra-High Temperature Ceramic Matrix Composites (UHTCMCs) are a new class of materials designed to merge the best features of ceramic matrix composites (CMCs), like damage tolerance, with those of

ultra-high temperature ceramics (UHTCs), like ablation resistance. The most recent manufacturing technologies for the production of UHTCMCs and thermo-mechanical and ablation properties are reviewed here.
Role: writing of the processing, microstructure and mechanical properties paragraphs of continuous carbon fibre reinforced composites obtained by slurry infiltration and sintering or RMI.

CONFERENCE PROCEEDINGS (* = corresponding author)

1. **Fabrication and characterization of UHTCMCs**
36th Technical Conference of the American Society for Composites 2021: Composites Ingenuity Taking on Challenges in Environment-Energy-Economy, ASC 2021, 2021, 1, pp. 450–457
Antonio Vinci*, Luca Zoli, Pietro Galizia, Laura Silvestroni, Carlos Gutiérrez-Gonzalez, Sergio Rivera, Diletta Sciti
https://www.asc-composites.org/conference_proceedings
Cit.: 0
In the framework of the C3harme project, a new class of materials labelled UHTCMCs, consisting of a UHTC matrix reinforced with carbon fibres, has been developed and characterized in order to overcome these challenges.
Role: fabrication of the carbon fibre reinforced composites via slurry infiltration and sintering, literature review, writing and review editing.

2. **Processing and characterization of carbon fibre reinforced ZrB_2/SiC/WC composites**
Proceedings of the Workshop for young ceramists, 2018-September
Antonio Vinci, Luca Zoli, Diletta Sciti*
http://www.worldcat.org/oclc/1124655306
Cit.: 0
The sintering behaviour and mechanical properties of carbon fibre reinforced ZrB_2/SiC/WC composites was investigated. At 2000°C severe fibre degradation occurs, leading to brittle behaviour, while at 1800°C the ceramic matrix is still very porous. A temperature of 1900°C was found as the best compromise to maximize strength and avoid brittle fracture.
Role: preparation of the ceramic suspensions, fabrication of the composites via slurry infiltration and hot pressing, microstructure analysis, mechanical characterization, writing of the original draft and review editing.

3. **Ultra-high-temperature ceramic matrix composites for hybrid rocket nozzles**
Proceedings of the International Astronautical Congress, IAC, 2019, 2019-October
Giuseppe Di Martino, Stefano Mungiguerra, Anselmo Cecere, Raffaele Savino, Luca Zoli, Antonio Vinci, Laura Silvestroni, Diletta Sciti
https://www.iris.unina.it/handle/11588/779636
Cit.: 0
Nozzle throat inserts and complete subscale nozzles were tested, comparing their behaviour to a classical graphite nozzle tested in the same operating conditions. Results showed that UHTCMCs with optimised porosity have strong mechanical properties and outstanding erosion resistance.
Role: Fabrication of the carbon fibre reinforced composites via slurry infiltration and sintering, microstructural analysis.

4. **Hybrid rockets with nozzle in ultra-high-temperature ceramic composites**
Proceedings of the International Astronautical Congress, IAC, 2018, 2018-October
Giuseppe Di Martino, Stefano Mungiguerra, Anselmo Cecere, Raffaele Savino, Antonio Vinci, Luca Zoli, Diletta Sciti
https://iafastro.directory/iac/archive/browse/IAC-18/C4/3/47333/
Cit. 2

UHTCMCs have been tested in hybrid rockets with HDPE and oxygen The most suitable materials compositions are selected to develop nozzle throat inserts and complete nozzles. Then, the performances of the rocket with graphite and UHTCMC nozzles are compared and discussed.
Role: fabrication of the carbon fibre reinforced composites via slurry infiltration and sintering, writing of the processing and microstructure paragraphs.

5. **Introduction to H2020 project C3HARME: Next generation ceramic composites for combustion harsh environments and space**
Ultra-High Temperature Ceramics: Materials for Extreme Environment Applications IV, ECI, 2017-September
Diletta Sciti, Laura Silvestroni, Luca Zoli, Antonio Vinci, Frederic Monteverde
https://dc.engconfintl.org/uhtc_iv/40/
Cit.: 0
This work aims at giving an introduction to a dedicated session that illustrates the most important challenges addressed by C3HARME project, including the integration between well-established and novel techniques for CMCs and UHTCs production, the need for very high temperature characterization, the meaning of self-healing capability for UHTCMCs, etc.
Role: writing of the introduction paragraph, review editing.

BREVETTI

1. **Process for obtaining composite, ultra-refractory, fibre-reinforced ceramic materials**
WO2020104959A1, 28/05/2020
Diletta Sciti, Laura Silvestroni, Antonio Vinci, Luca Zoli
https://worldwide.espacenet.com/patent/search?q=pn%3DEP3883906A1
Patent application regarding the processing of ultra-high temperature ceramic matrix composites via slurry infiltration of fibres with ceramic suspensions.
Role: rheology studies of the ceramic suspensions, fabrication of the carbon fibre reinforced composites via slurry infiltration and sintering, microstructure analysis.

RAPPORTI TECNICI (* = relatore)

1. **WP1 Report: production of prototypes and thermal conductivity of samples (TetraPak)**
ISSMC – CNR, Rapporto Tecnico n° 38/2022
Francesca Servadei*, Antonio Vinci, Pietro Galizia, Luca Zoli, Diletta Sciti
Production of thin UHTCMCs, microstructure analysis and thermal conductivity measurements.

2. **WP0 Report: preliminary screening of the electrical resistivity, CTE, microstructure and machinability of UHTCMCs (TetraPak)**
ISSMC – CNR, Rapporto Tecnico n° 37/2022
Antonio Vinci*, Francesca Servadei, Pietro Galizia, Luca Zoli, Diletta Sciti
Study of the electrical resistivity, CTE, microstructure and machinability of ZrB2/SiC-based UHTCMCs and conventional SiC-based composites.

3. **Synthesis of YBC phases from Y_2O_3, B and C**
ISTEC – CNR, Rapporto Interno n° 1/2021
Antonio Vinci*, Luca Zoli, Diletta Sciti
Study of the synthesis routes to obtain novel lamellar phases based on YB_2C_2 via boro-carbothermal reduction of Y_2O_3. SEM/EDS analysis followed by XRD analysis to identify all the formed phases and select the best synthesis route

4. **Viscosimetric analysis of ZrB_2 – SiC – Si_3N_4 based suspensions**
ISTEC – CNR, Rapporto Interno n° 11/2016

Antonio Vinci*, Luca Zoli, Andreana Piancastelli
Rheology study of ZrB_2/SiC/Si_3N_4 based aqueous suspensions, study of the viscosity dependence with the solid loading and pH, selection of the best suspension for the infiltration of CMCs.

PRESENTAZIONI ORALI A CONFERENZA SU INVITO (* = presenting author)

1. **Nb-based coatings to improve the oxidation resistance of UHTCMCs at 1700°C**
   A. Vinci*, J.E. Foerster, R. Naraparaju, D. Sciti
   ECI 2024, Giardini Naxos (Italy), April 14-19

2. **Influence of Nb coatings on the oxidation resistance of C-ZrB2/SiC composites up to 1700°C**
   A. Vinci*, J.E. Foerster, R. Naraparaju, D. Sciti
   ICACC 2024, Daytona Beach (FL), United States, January 28 – February 2, 2024

3. **Scale up and Testing of UHTCMCs**
   D. Sciti, A. Vinci*, L. Zoli
   ACA XI 2023, Belgrade (Serbia), September 18-20

4. **Ultra-high Temperature Ceramic Matrix Composites: Processing, Characterization & Applications**
   A. Vinci*, L. Zoli, D. Sciti, S. Mungiguerra, A. Cecere, R. Savino
   HT-CMC 2023, Jeju (South Korea), August 27-31, 2023

5. **Will UHTCs and composites be enabling solutions for harsh environments?**
   D. Sciti*, L. Silvestroni, F. Monteverde, P. Galizia, S. Failla, A. Vinci
   ECERS 2023, Lyon (France), July 2-6, 2023

6. **Microstructural and mechanical properties of different ultra-high temperature CMCs: tensile and flexural strength up to 1800°C**
   P. Galizia*, D. Sciti, J. Binner, V. Venkatachalam, M. Lagos, F. Servadei, L. Zoli, T. Reimer
   ECERS 2023, Lyon (France), July 2-6, 2023

7. **Processing and characterization of layered UHTCMCs reinforced with continuous or discontinuous carbon fibers**
   A. Vinci*, D. Sciti, P. Galizia, S. Failla, L. Zoli
   ECI 2022, Santa Fe (NM), USA, November 13-18, 2022

8. **Extending carbon fibre ceramic composites from boride to carbide and oxide matrices**
   D. Sciti*, A. Vinci, P. Galizia, S. Failla, L. Zoli
   Ceramics in Europe (ECerS'22, ICC9), Krakow (Poland), July 10-14, 2022

9. **Studying the densification of B4C-TiB2 composites by hot pressing and pressureless sintering method**
   S. Failla*, A. Vinci, L. Silvestroni, N. Gilli, D. Sciti, L. Zoli
   ICACC'21, virtual conference Daytona Beach (FL), USA, February 8-11, 2021
10. **Fabrication and characterization of carbon fibre reinforced UHTC composites**
    A. Vinci*, L. Zoli, D. Sciti
    ICACC'20, Daytona Beach (FL), USA, January 24-31, 2020

11. **Is sintering technology suitable for the densification of ultra-high temperature ceramic matrix composites?**
    L. Zoli*, A. Vinci, P. Galizia, C. Gutiérrez-Gonzalez, S. Rivera, D. Sciti
    PACRIM13, Okinawa (Japan), October 27 - November 1, 2019

12. **Sintered UHTCMCs for aerospace components reusable beyond 2500°C**

D. Sciti*, L. Zoli, A. Vinci, T. Reimer, B. Esser, S. Mungiguerra, R. Savino
PACRIM13, Okinawa (Japan), October 27 - November 1, 2019

13. **Spring(s) in harsh environments: micromechanical modelling of UHTCMCs**
P. Galizia*, L. Zoli, A. Vinci, S. Failla, F. Saraga, D. Sciti
ENGCER19, Smolenice Castle (Slovakia), May 14, 2019

14. **Advances in the processing and characterization of UHTC-Composites for Aerospace**
D. Sciti*, A. Vinci, P. Galizia, L. Silvestroni, L. Zoli
CC7, Brazil, June 17-2, 2018

15. **Hi-Tech Ceramics and Composites for Harsh Environments**
D. Sciti*, L. Zoli, A. Vinci, S. Failla, P. Galizia
Materials.it 2018, Bologna (Italy), October 22-26, 2018

PRESENTAZIONI ORALI A CONFERENZA AUTORATE (* = presenting author)

1. **Oxidation resistance of UHTCMCs fabricated by Liquid Silicon Infiltration and Sintering**
A. Vinci*, L. Zoli, M. Friess, D. Sciti
PACRIM 2025, Vancouver (Canada), May 4-9, 2025

2. **Oxidation behaviour of ZrB2/SiC-based UHTCMCs with HfB2 graded structures**
A. Vinci*, L. Zoli, D. Sciti, S. Mungiguerra, A. Cecere, R. Savino
ECERS 2023, Lyon (France), July 2-6, 2023

3. **Synthesis and mechanical characterization of YB2C2-based ceramics**
A. Vinci*, L. Zoli, L. Silvestroni, N. Gilli, D. Sciti
Ceramics in Europe (ECerS'22, ICC9), Krakow (Poland), July 10-14, 2022

4. **Fabrication and characterization of UHTCMCs**
A. Vinci*, L. Zoli, P. Galizia, L. Silvestroni, C. Gutiérrez, Sergio Rivera, D. Sciti
36th ASC virtual conference, Texas, September 19-23, 2021

5. **Effect of oxide-based additives on the microstructure and thermo-mechanical behaviour of carbon fibre reinforced ZrB2/SiC composites**
A. Vinci*, L. Zoli, L. Silvestroni, P. Galizia, D. Sciti
ICC8 virtual conference Korea, April 25-30, 2021

6. **Effect of group IIIb rare earth oxides on the microstructure and thermomechanical properties of carbon fibre reinforced ZrB2/SiC composites**
A. Vinci*, L. Zoli, D. Sciti
ICACC'21, virtual conference, Daytona Beach (FL), February 8-11, 2021

7. **Fabrication and characterization of UHTCMCs based on the ZrB2/SiC/Y2O3 system**
A. Vinci*, L. Zoli, P. Galizia, L. Silvestroni, D. Sciti, S. Mungiguerra, R. Savino
HT-CMC19, Bordeaux (France), September 22-26, 2019

8. **Processing and characterization of carbon fibre reinforced ZrB2/SiC/WC composites**
A. Vinci*, L. Zoli, D. Sciti
ECerS 2019, Torino(Italy), June 17-20, 2019

9. **Reactive Melt Infiltration of carbon fibre reinforced ZrB2 composites with Zr2Cu**
   A. Vinci*, L. Zoli, D. Sciti, M. Kütemeyer, D. Koch
   ICACC'19, Daytona Beach (FL), January 27-31, 2019

10. **Damage tolerant carbon fibre reinforced ZrB2/SiC composites**
    A. Vinci*, L. Zoli, D. Sciti, M. Gutierrez, S. Riveira
    ICACC'19, Daytona Beach (FL), January 27-31, 2019

11. **Oxidation resistance of carbon fibre reinforced ZrB2/SiC composites at T>2000°C**
    A. Vinci*, L. Zoli, D. Sciti, T. Reimer, D. Koch
    ICACC'19, Daytona Beach (FL), January 27-31, 2019

12. **Fabrication and characterization of carbon fibre reinforced ZrB2/SiC/WC composites**
    A. Vinci*, L. Zoli, D. Sciti
    Workshop for Young Ceramists – Speech contest, Bologna (Italy), November 26-27, 2018 (2nd Best oral presentation)

13. **Mechanical behaviour of carbon fibre reinforced carbides up to 2100°C**
    A. Vinci*, L. Zoli, D. Sciti, J. Watts, G. Hilmas, W.G. Fahrenholtz
    Materials.it 2018, Bologna(Italy), October 22-26, 2018

14. **Fabrication and characterization of carbon fibre reinforced UHTCs**
    A. Vinci*, L. Zoli, D. Sciti
    YCN workshop 2018, Smolenice (Slovakia), October 2-4, 2018

15. **Thermo-mechanical behavior of novel UHTCMCs with a carbide matrix at temperatures above 1800°C**
    A. Vinci*, L. Zoli, D. Sciti, J. Watts, G. Hilmas, W.G. Fahrenholtz
    ICACC'18, Daytona Beach (FL), January 21-26, 2018

16. **Oxidation behaviour at 1650°C of carbon fibre reinforced ZrB2/SiC composites**
    A. Vinci*, L. Zoli, D. Sciti
    ECI, Windsor (UK), September 17-20, 2017

17. **Effect of SiC on the oxidation resistance of carbon fibre reinforced ZrB2/SiC**
    A. Vinci*, L. Zoli, D. Sciti
    ECerS 2017, Budapest (Hungary), July 9-13, 2017

18. **Effect of SiC addition on the mechanical properties of ZrB2/SiC/Cf based UHTCMCs**
    A. Vinci*, L. Zoli, C. Melandri, D. Sciti

PRESENTAZIONI ORALI A CONFERENZA CO-AUTORATE (* = presenting author)

1. **Manufacturing of layered UHTCMCs using pliable, short fibre-reinforced ceramic sheets**
   M. Mor, A. Vinci, S. Failla, P. Galizia, L. Zoli, D. Sciti
   ECERS 2023, Lyon (France), July 2-6, 2023

2. **Tribological characterization of UHTCMCs for brake applications**
   M. Mor, M. Meiser, D. Sciti, A. Vinci, N. Langhof, S. Schaffoner
   Ceramics in Europe (ECerS'22, ICC9), Krakow(Poland), July 10-14, 2022

3. **Manufacturing of UHTCMCs: polymer infiltration and pyrolisys vs sintering**
   L. Zoli, S. Servadei, A. Vinci, P. Galizia, D. Sciti
   CICC-12, China, November 14-17, 2021

4. **Manufacturing of UHTCMCs via powder slurry infiltration and polymer infiltration and pyrolisys (vs) sintering**
   L. Zoli, S. Servadei, P. Galizia, A. Vinci, D. Sciti
   ICC8, virtual conference Korea, April 25-30, 2021

5. **Environmental barrier ability and safety aspects of UHTCMCs above 2273 K**
   P. Galizia, L. Zoli, A. Vinci, D. Sciti
   ICACC'21, virtual conference Daytona Beach (FL), February 8-11, 2021

6. **Microstructure and mechanical properties of ZrB2/SiC based UHTCMCs for brakes applications**
   M. Mor, A. Vinci, P. Galizia, L. Zoli, D. Sciti
   ICACC'21, virtual conference Daytona Beach (FL), February 8-11, 2021

7. **Experimental investigation on sintered UHT-CMC composites for Combustion Harsh Environments and Space**
   S. Mungiguerra, G. Di Martino, R. Savino, L. Zoli, A. Vinci, D. Sciti
   HT-CMC/10th, Bordeaux(France), September 22-26, 2019

8. **High-Temperature Mechanical Characterization of UHTCMCs**
   T. Reimer, D. Sciti, D. Koch, M. Kuetemeyer, A. Vinci, L. Silvestroni, P. Galizia, F. Monteverde, S. Rivera
   HT-CMC/10th, Bordeaux(France), September 22-26, 2019

9. **Retained strength of UHTCMCs treated above 2273 K in oxidizing environment**
   F. Monteverde, D. Sciti, L. Silvestroni, L. Zoli, F. Saraga, A. Vinci, P. Galizia, T. Reimer
   HT-CMC/10th, Bordeaux(France), September 22-26, 2019

10. **The effect of PAN or pitch-based C fibres on the microstructure and properties of continuous Cf-ZrB_2/SiC UHTCMCs**
    D. Sciti, L. Zoli, A. Vinci, P. Galizia, L. Silvestroni, T. Reimer, S. Rivera
    HT-CMC/10th, Bordeaux(France), September 22-26, 2019

11. **UHTCMCs with a boride matrix for novel rocket nozzles**
    L. Zoli, D. Sciti, L. Silvestroni, P. Galizia, A. Vinci
    CICC-11th, Kunming (China), May 25-29, 2019

12. **The challenging mechanical characterization of continuous fiber-reinforced ultra-high temperature ceramics for extreme conditions**
    P. Galizia, L. Zoli, A. Vinci, S. Failla, D. Sciti
    Materials.it 2018, Bologna(Italy), October 22-26, 2018

13. **Ultra-high temperature Ceramic matrix composites for extreme environments**
    L. Zoli, A. Vinci, P. Galizia, D. Sciti
    Materials.it 2018, Bologna (Italy), October 22-26, 2018

14. **Mechanical properties and microstructure of unidirectional UHTCMCs**
    L. Zoli, A. Vinci, S. Failla, P. Galizia, D. Sciti
    CIMTEC, Perugia (Italy), June 4-8, 2018

15. **Developing UHTCMCs: effect of matrix additives on the resistance to oxidation**
    D. Sciti, A. Vinci, L. Zoli
    PACRIM12, Waikoloa, Hawaii (US), May 21-26, 2017

POSTERS A CONFERENZA

1. **Hi-Tech Ceramics and Composites for Severe Environments**
   D. Sciti, F. Monteverde, L. Silvestroni, L. Zoli, A. Vinci, S. Failla
   Conferenza di dipartimento CNR, Assisi (Italy) September 24-26, 2018

2. **Oxidation behavior of a continuous carbon fiber reinforced ZrB2/SiC/Si3N4 composite**
   A. Vinci*, L. Zoli, E. Landi, D. Sciti
   WGCC – Cuenca (Spain), September 28-30, 2016

3. **Effect of metal oxide additives on the activity and stability of medium temperature Water Gas Shift catalysts**
   C. Lucarelli, R. Faure, G. Fornasari, D. Gary, N. Schiaroli, A. Vaccari, A. Vinci
   GIC 2015, Amantea (Italy), June 14-17, 2015

COMPETENZE DIGITALI

1. **Zeiss Sigma FE-SEM** (SEM)
   Software per microscopio elettronico a scansione

2. **INCA/AZTEC** (EDS)
   Software di analisi quali/quantitativa mediante spettroscopia a dispersione di energia

3. **MDI Jade 5** (XRD)
   Software di analisi ed elaborazione dati di diffrattogrammi

4. **Image-Pro Analyzer 7.0** (Image analysis)
   Software di analisi di imagine per la correzione di immagini o per analisi quantitativa di fasi ceramiche

5. **Microsoft Office** (Word, Excel, Power Point, Outlook)
   Pacchetto software per la scrittura di articoli e fogli di calcolo, presentazioni e gestione email

6. **Factsage 7.0** (Thermodynamics)
   Software di simulazioni termodinamiche e diagrammi di fase

7. **HSC Chemistry 6.0** (Thermodynamics)
   Software di simulazioni termodinamiche e diagrammi di volatilità

COMPETENZE LINGUISTICHE

1. **Italiano** (lingua madre)
2. **Inglese** (livello B2)

PROTOTIPI

1. **Manufacturing of ceramic composites of large dimensions**
   Scale up di compositi ceramici ultra-refrattari e produzione di piastrelle di diametro 400 mm, e blocchi cilindrici di diametro 170 mm e altezza 130 mm, dai quali sono stati ricavati dei prototipi di ugelli per razzi e tiles per i sistemi di protezione termica.

ASSOCIAZIONI

1. **Italian Ceramic Society (ICerS)**
   2016 – in corso

2. **American Ceramic Society (ACerS)**
   2020 – 2021

3. **Associazione Italiana Metallurgia (AIM)**
   2018 – 2020

PATENTE DI GUIDA

1. **Patente B**