

Francesco Picelli

WORK EXPERIENCE

Feb 2023 - present

Research fellowship

ISSMC-CNR (former ISTEC) (via Granarolo 64, 48018 Faenza RA, Italy)

Research in the field of transparent ceramics (TC), based on garnets (YAG, GAGG, and GGG), for laser and scintillation application.

Experimental skills: powder treatment (weighing, mixing, desiccation, pressing), thermal treatment (calcination and high-vacuum sintering), polishing, characterization (SEM, EDX, transmittance and optical microscope for porosity analysis), tape casting of ceramic powder.

Nov 2019 - Oct 2022

PhD student

ISSMC-CNR (former ISTEC) (via Granarolo 64, 48018 Faenza RA, Italy)

Research in the field of transparent ceramics (TC), based on YAG (yttrium aluminium garnet), for laser application. The PhD research work was part of the project CeMiLAP² funded by the Italian Ministry of Defence. The aim of the project is to produce transparent YAG with non-uniform doping of Ytterbium and Chromium to increase laser efficiency. The approach verted on the selection of suitable starting materials, the test of different powder treatments and sintering conditions.

Experimental skills: powder treatment (weighing, mixing, desiccation, pressing), thermal treatment (calcination and high-vacuum sintering), polishing, characterization (SEM, EDX, transmittance and optical microscope for porosity analysis), tape casting of ceramic powder.

Mar 2019 - Oct 2019

Laboratory analyst

Conteco s.r.l. (via Salvador Allende 2, 29012 Caorso PC, Italy)

Sample preparation of industrial wastes for inorganic and organic characterization.

Use of: GM-MS, HSGC-MS, GC-FID, OES-ICP, ion chromatograph.

Jul 2018 - Sep 2018

Junior analyst in quality control laboratory

Pomodoro 43044 (strada dei Notari 36, 43044 Collecchio, PR Italy)

Routine analysis in tomatoes transformation factory.

EDUCATION AND TRAINING

Nov 2019 - Oct 2022

PhD in "Material Science and Technology"

Università degli studi di Parma (via dell'Università 12, 43121 Parma, PR, Italy)

Thesis defended on 03 Feb 2023

Research activities carried out at ISSMC-CNR

PhD thesis title: "Transparent ceramics for LASER application"

Supervisor: Laura Esposito (ISSMC-CNR)

Oct 2016 - Jul 2018

Master's degree in "Industrial chemistry"

Università degli studi di Parma (via dell'Università 12, 43121 Parma, PR, Italy)

Grade: 110/110 with honours

Six months internship at the Institute of Materials for Electronics and Magnetism IMEM-CNR (Parco Area delle Scienze 37/A, 43124 Parma, PR Italy)

Master's thesis: "Characterization of organic electrochemical transistor PEDOT:PSS-based deposited on textile fibre."

Supervisors: Andrea Zappettini (IMEM-CNR), Lara Righi (UniPR)

Sep 2013 - Oct 2016

Bachelor's degree in "Chemistry"

Università degli studi di Parma (via dell'Università 12, 43121 Parma, PR, Italy)

Grade: 110/110 Protocol: Diploma no. F8-274 of 17 Feb 2017

Three months internship in the university laboratory of Professor Arturo Arduini.

Bachelor's thesis: " Synthesis and characterization of new bis(phenyl-ureido)calix[6]arene derivatives"

Supervisor: Arturo Arduini (UniPR)

Sep 2008 - Jun 2013

High school diploma in "Chemistry and biology"

I.T.I.S. Leonardo da Vinci (via Toscana 10, 43122 Parma, PR Italy)

Grade: 94/100

SPECIFIC TRAINING

Schools

International Summer School "Materials 4.0 - Materials Genome Engineering", Dresden (Germany), 17-21 Aug 2020

ECerS School on Additive Manufacturing "DOC3D printing", Toulouse (France), 26-27 Oct 2020

Aldo Armigliato SEM School in Material Science, Bologna (Italy), 09-13 Nov 2020

Courses

Advanced materials for energy application, prof. O. Gutfleish May-June 2020 and Nov 2020. visiting professor at Università degli Studi di Parma.

XRD theory and experimental for material characterization, prof. L. Marchiò 25-26 May 2021. At Università degli Studi di Parma.

Analysis techniques for nanostructured, amorphous, and polycrystalline materials, prof. L. Righi, April-June 2021. At Università degli Studi di Parma.

Basic scientific Chinese, prof. G. Pelosi March-April 2021. At Università degli Studi di Parma.

Scientific English, Mr. A. Wallwork 04-25 Jun 2021. At Università degli Studi di Parma.

PUBLICATIONS

Papers

Gentile F. *et al.*, *A mathematical model of OECTs with variable internal geometry* Sensor and Actuators, A: Physical 304, 111894 (2020). <https://doi.org/10.1016/j.sna.2020.111894>

Hostaša, J. *et al.*, *Sintering aids, their role and behaviour in the production of transparent ceramics* Open Ceramics 7, 100137 (2021). <https://doi.org/10.1016/j.oceram.2021.100137>

Picelli, F. *et al.*, *A useful approach to understand the origin of defects in transparent YAG ceramics* MRS Communications 12, 807-812 (2022). <https://doi.org/10.1557/s43579-022-00240-2>

Oral presentations

Effect of powder treatment on optical quality of transparent YAG ceramics, Picelli F. *et al.* 14th ECerS Conference for Young Scientist in Ceramics, Novi Sad (Serbia) 20-23 Oct 2021.

Going beyond SEM: bulk analysis of defects in transparent ceramics by optical microscopy, Picelli F. *et al.* International Conference on Excited States of Transition Elements - ESTE2023, Świeradów-Zdrój (Poland) 03-08 Sep 2023

Posters

Poster presentation at international conference:

FAST post-sintering densification of transparent YAG ceramics, Picelli F. *et al.* XVII ECerS Conference "Ceramics in Europe 2022", Kraków (Poland) 10-14 Jul 2022.

Poster presentation at international summer school:

Influence of powder morphology on YAG microstructure, Picelli F. *et al.* DCMS Materials 4.0 – Materials genome engineering, Dresden (DE) 17-21 Aug 2020.

Projects

Mobility project awarded by JECS Trust:

Production of Yb:YAG transparent ceramic components by pressure-assisted densification techniques and their characterization, Picelli F, Boulesteix R., Hostaša J. JECS Trust contract no 2021280.

Funds to cover my stay at Professor Boulesteix laboratories for three months.

Full-time involvement, as main part of the PhD thesis, in the project CeMiLAP² funded by the Italian Ministry of Defence.

Other publications

Author of internal report: *State of the art of tape cast process for transparent ceramics* Protocol: RI CNR-ISTEC 02/2020 03 Sep 2020

Co-author of technical report: *CeMiLAP² - Deliverable fase 1* Protocol: CNR-ISTEC 2180 16 Nov 2021

PERSONAL SKILLS

Native language

Italian

Other language

English

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
B1	B2	B1	B1	B1
IELTS on Nov 2018				

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

Computer skills

Advanced knowledge of LibreOffice suite (Writer, Calc, Impress, Draw) and MS Office suite (Word, Excel, PowerPoint, Publisher).
Basic knowledge of image-analysis software (ImageJ)
Good knowledge of bibliographic databases and citation management software (Mendeley)