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Maurizio Grigante

Nationality: Italian

Gender: Male

ABOUT ME

I Graduated in Chemical Engineer at the University of Padua where in the year 2000 I obtained the PhD title in Fisica Tecnica. I continued the research activity at the University of Padua Wood moving then to the University of Trento in 2005 as Researcher. Actually I am an Associate Professor in sector 09/C2 - Fisica Tecnica e Ingegneria Nucleare, SSD ING-IND/10 - Fisica Tecnica Industriale.

EDUCATION AND TRAINING

Degree in Chemical Engineering

University of Padua [Current]

Address: (Italy)

www.unipd.it

Field(s) of study: Engineering, manufacturing and construction : *Chemical engineering and processes*

Final grade : 108/110

Thesis: Predictive Thermodynamic Modelling for New Refrigerants Fluids and their Mixtures

PhD Thesis Defence

University of Padua [17/02/2000]

Address: (Italy)

Post PhD Fellowship

University of Trento (Italy) [20/06/2000 - 20/09/2004]

Address: via Mesiano, 77, 38123 Trento

www.unitn.it

ACTUAL RESEARCH ACTIVITIES AND INTERNATIONAL RESEARCH COLLABORATIONS

Research in Modelling Thermodynamics

[2000 - Current]

Collaboration activities with the Ruhr-University of Bochum (Germany) with Prof. Wagner and Prof. Span in order to

extend their "Optimization Equation Method" (OPTIM) to transport properties modelling equations regarding innovative fluid for industrial and energy applications.

Thermodynamic fluids properties measurements

[2005 - Current]

Research Collaboration with the Ecole des Mines of Fontainebleau (Paris) on research projects pertaining the determination of thermophysical properties of innovative fluids for advanced applications as nanofluids for enhanced heat transfer in thermal processes.

Pillow plates heat exchangers and Company Collaboration

[2020 - Current]

Collaboration with the University of Paderborn (Germany) for experimental test and modelling of novel heat exchangers design as pillow plates heat exchangers. Within this project, Prof. M. Grigiante is Supervisor of the PhD student Alessandro Dai Prè attending the PhD course of Industrial Innovation. The research activity is carried out, conforming to the Doctorate Program, jointly with the DAV COIL Company to set up innovative design procedures for advanced heat exchangers including future projects in Additive Manufacturing applied to heat exchangers devices.

Thermodynamic Modelling and Measurements

[2006 - Current]

Collaborations with the Laboratory of Thermophysical Properties at the University of Oldenburg (Germany), Institute of Chemistry. Activities pertaining modelling and measurements of innovative fluid involving in industrial processes.

INTERNATIONAL FELLOWSHIPS

DAAD (Deutscher Akademischer Austausch Dienst)

[01/09/2004 - 31/03/2005]

DAAD fellowship at the Department of Industrial Chemistry of the Carl von Ossietzky University of Oldenburg (Germany)

MARIE CURIE I.E.F. (Intra European Fellowship)

[01/06/2005 - 01/06/2006]

MARIE CURIE I.E.F. (Intra European Fellowship) Proposal N° 010557. Research project " *An Innovative Thermodynamic Study to Investigate Advanced Technology for Supercritical Processes*" This research has been carried out at the LTP (Laboratory of Thermophysical Properties) of the University of Oldenburg (Germany), Faculty 5, Institute of Chemistry, Industrial Chemistry Chair under the supervision of: **Prof. Jürgen Dr. Gmehling.**

WORK EXPERIENCE

Fellowship at the Italian Research Institute (CNR)

Italian Research Institute (CNR) [20/09/1993 – 30/08/1995]

City: Padua

Country: Italy

Project Engineer

HIROSS AIR COOLING S.p.A. [10/01/1996 – 02/1997]

City: Padua

Country: Italy

TEACHING ACTIVITIES AT UNITN-UNIBZ

Professor of Fisica Tecnica

[22/09/2021 – Current]

Teacher of the module of Technical Physics in the course of Thermofluidodynamics, degree course In Industrial Engineering; (60 hours, CFU=6)

Professor of Fisica Tecnica

[2005 – Current]

Teacher of the module of Technical Physics in the course of Thermofluidodynamics, degree course in Industrial Engineering - Technology Address (60 hours, CFU=6)

Professor of Renewable Energies

[2008 – Current]

Professor of the Renewable Energy, degree course of Environment Engineering.
(60 hours, CFU=6)

Professor of DHSD

[2015 – Current]

Professor of District Heating System Design, Master Course of the degree in Energy Engineering of the Universities of Trento and Bolzano

PUBLICATIONS

Production and characterization of novel EPDM/NBR panels with paraffin for thermal energy storage of buildings

[2022]

F. Valentini, A. Dorigato, L. Fambri, M. Bersani, M. Grigiante, A. Pegoretti. Submitted to Energy

This paper deals with Innovative panels suitable for the thermal management of buildings have been produced combining an Ethylene-Propylene Diene Monomer (EPDM) matrix with a paraffin wax having a melting temperature of 28 °C.

A complete two-parameter kinetic model to describe the thermal pretreatment of biomasses

[2021]

<https://doi.org/10.1007/s13399-020-00693-2>

M. Grigiante, M. Brighenti, M. Maldina. Biomass Conversion and Biorefinery (2021) 11:2543–2556

This study proposes a generalized approach to investigate the kinetics of thermal degradation of biomasses. The main purpose of

this study aims to exploit the potentialities of the "model-free" methods in setting up an innovative computational procedure to

completely describe the kinetics of thermal degradation processes involving organic materials and in particular biomasses.

Potentialities of mass spectrometry on activation energy and secondary reactions determination of calcium oxalate thermal decomposition

[2021]

<https://doi.org/10.1002/kin.21504>

R. Campostrini, M. Grigiante, M. Brighenti. Int J Chem Kinet. 2021 (53) 1082–1100.

This work investigates the potentialities of the thermal analysis (TA) coupled with the mass spectrometry (MS) technique by studying the thermal decomposition of calcium oxalate monohydrate ($\text{CaC}_2\text{O}_4 \cdot \text{H}_2\text{O}$). The most important aim of this work consists in demonstrating the efficacy of coupling the thermal gravimetric (TG) with the mass spectrometry experimental approach to check the presence of intermediate reactions beyond the conventional three-step decomposition

Experimental investigations of air-CO₂ biomass gasification in reversed downdraft gasifier

[2019]

www.elsevier.com/locate/fuel Experimental

D. Antolini, S.S. Ail, F. Patuzzi, M. Grigiante, M. Baratieri. Fuel 253 (2019) 1473–1481

This article investigates the potential of biomass gasification to utilize CO₂ as feed with the conventional air gasification system for the conversion of carbon dioxide to carbon monoxide and thus enable the participation of CO₂ in the fuel-making process.

Experimental and modeling analysis of Air and CO₂ biomass gasification in a reverse lab scale downdraft gasifier

[2019]

D. Antolini, S.S. Ail, F. Patuzzi, M. Grigiante, M. Baratieri. Energy Procedia 158 (2019) 1182–1187

This research work aims at investigating the effect of carbon dioxide feed in biomass gasification as a possible way to directly

exploit the exhaust gas from the engine of combined heat and power systems to convert carbon dioxide to carbon monoxide via

Boudouard reaction and consequently increase the carbon conversion and reduce char yield.

An innovative small-scale prototype plant integrating a solar dish concentrator with a molten salt storage system

[2018]

www.elsevier.com/locate/renene

S.Turrini, M.Bettonte, M. Eccher, M. Grigiante, A. Miotello, R.S.Brusa. Renewable Energy 123 (2018)

An innovative plant configuration joining a thermal energy storage device with a 2 kWth parabolic solar dish collector (PDC) has been designed. The novelty of this small-scale solar plant prototype consists in the use of molten salts (MS) both as fluid carrier and thermal energy storage medium.

NETWORKS AND MEMBERSHIPS

Member of Council of AIRU (Italian Association of District Heating)

[Milano , 05/04/2019 – Current]

COST (European Cooperation Science and TECHNOLOGY) Research network for including geothermal technologies into decarbonized heating and cooling grids

[Vienna, 02/06/2020 – Current]

Member of Council of the Doctorate Program in Industrial Innovation

[UNITN, 2020 – Current]

According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV

City Trento, 06 February 2023