

DICCA SEMINAR SERIES 2022

ALESSANDRA SANSON - Institute of Science and Technology for Ceramics (ISTEC)

“Ceramic Materials and the Energy Transition”

Abstract

The climate changes consequent to the escalation of the greenhouse gas emissions are rising increasing concern and push towards the development of a new green energy system.

In this scenario, there is need of efficient and more sustainable materials to effectively drive the energy transition and build a more sustainable energy sector.

Although Ceramic is the most ancient material know to man, it has deeply evolved since then, opening the path to a highly engineered platform for several different applications. Not only bulk and monophasic, the term “ceramic” comprises nowadays several materials such as composites, multiphasic systems and films that are widely applied for the production, storage and energy efficiency.

The aim of this talk is to give an overview of the role played by ceramic materials in the quest towards an efficient, carbon neutral, renewable energy system. From the hydrogen economy to solar conversion and energy harvesting and storage, the possibilities and challenges offered by the ceramic materials are presented and discussed.

Short bio

Alessandra Sanson gained her PhD at Cranfield University (UK) in 2003 and from 2008 is leader of the Materials and Processing for Energetics group of ISTEC. She is currently Acting Director of the Institute of Science and Technology for Ceramics (ISTEC) in Faenza. Her main activities concern the synthesis and characterization of advanced ceramics powders and their shaping processes. Among the latter, other than the most common used for bulk materials (pressing, slip-casting and extrusion) she has a solid background in thick film deposition (screen printing, tape casting, etc.). The ceramic processes are mainly devoted to the shaping of devices for production and storage of energy as solid oxide fuel cells (SOFC) and electrolyzers (SOECs), photovoltaics and solar fuels, batteries and supercapacitors, gas membranes, etc. She is supervisor of MSc as well as PhD students of Parma and Bologna University and member of the board of professors of the PhD course in Molecular Science of the Padua University. She is Italian representative in Mission Innovation for the Challenge 5 “Converting Sunlight” and CNR representative for the Photovoltaic sector. She is co-author of more than 90 papers in international journals and two patents.

27/05/2022 – 2.30pm (CET)

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