

Candidate application to the ISGS Board of Directors

Prof./Dr. Maria Francesca Casula

Age: 48

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CV with main research interests

M. F. Casula is Professor of Chemical Fundamentals of Technologies at the Department of Mechanical, Chemical and Materials Engineering at the University of Cagliari, Italy, where she is currently Vice-Director, and is a member of the Italian Interuniversity Consortium on Materials Science and Technology (INSTM). She obtained the Laurea Degree (1998) and the PhD (2002) in Chemistry at the University of Cagliari and performed post-lauream/post-doctoral research activity at the Department of Chemical Sciences of the University of Cagliari and at the Department of Chemistry of the University of California, Berkeley, USA. She visited the Center for NanoScience (Munich, Germany) and the Catalan Institute for Energy Research (Barcelona, Spain) and participated to experiments at large scale facilities such as the Synchrotron Light Source Laboratory in Daresbury, U.K.; ELETTRA, Trieste, Italy; and at the Rutherford Appleton Laboratory in Chilton, U.K.. Her research activity is focused on the design, synthesis and physico-chemical characterization of materials, with particular reference to nanostructured solids with magnetic, catalytic, textural, and optical functionalities which can be applied for prospective use in areas ranging from biomedicine to environmental remediation. One specific interest is in the production of functional nanocomposites based on nanoparticles supported on matrices with controlled porosity, with particular reference to aerogels, and she coauthored the chapter *Aerogels containing metal, alloy and oxide nanoparticles in dielectric matrices*, in the *Aerogels Handbook* (Eds M. A. Aegerter, N. Leventis, M. M. Koebel, Springer, NY-USA). The research is carried out also through participation to regional, national and international projects (including projects funded by Fondazione di Sardegna, RAS, MIUR-PRIN, SEED-IIT, INSTM, COST-H2020) and is reported in more than 130 publications on international journals; the h-index associated to the author is 36 (based on Scopus, July 2022).

5 representative publications

S. V. Thakkar, A. Pinna, C. M. Carbonaro, L. Malfatti, P. Guardia, A. Cabot, M. F. Casula
Performance of oil sorbents based on reduced graphene oxide - silica composite aerogels,
Journal of Environmental Chemical Engineering (2020) Vol 8, Issue 1, 103632

D. Loche, L. Malfatti, D. Carboni, V. Alzari, A. Mariani, and M.F. Casula,
Incorporation of Graphene into Silica-based Aerogels and Application for Water Remediation,
RSC Advances (2016) 6, 66516-66523

F. Caddeo, D. Loche, M.F. Casula, A. Corrias
Evidence of a cubic iron sub-lattice in $t\text{-CuFe}_2\text{O}_4$ demonstrated by X-ray Absorption Fine Structure,
Scientific Reports (2018) 8, 797

G. R. Delpiano, M. F. Casula, M. Piludu, R. Corpino, P. C. Ricci, M. Vallet-Regi, E. Sanjust, M. Monduzzi, A. Salis
Assembly of Multicomponent Nano-bioconjugates Composed of Mesoporous Silica Nanoparticles, Proteins and Gold Nanoparticles,
ACS Omega (2019) 4, 11044–11052

F. Caddeo, A. Casu, D. Loche, L. M. Morgan, G. Mountjoy, C. O'Regan, M. F. Casula, S. Hayama, A. Corrias, A. Falqui,
Thermally Stable Surfactant-Free Ceria Nanocubes in Silica Aerogel,
Journal of Colloid and Interface Science 583 (2021) 376–384

Statement of interest

My application to join the ISGS Board is motivated by the possibility to contribute to the consolidation and widening of the ISGS community. I first started working on sol-gel materials more than 20 years ago, and since then I have attended the IV, V, and VI Italian Sol-Gel Workshops; the 6th edition of the ISGS Summer School "Frontiers in Hybrid Materials"; the 11th and 13th International Sol-Gel Conferences; and I have been among the International Committee Members of the 1st Conference on Aerogel Inspired Materials. Based on my experience I hope to support ISGS in promoting activities related to the consolidation of characterization approaches of sol-gel materials, with particular reference to the study of porous solids, such as aerogel-like materials, and their application for the development of functional nanocomposites.