


Event:
Date:
Place:

ENERGY in BUILDINGS 2017
Saturday October 21, 2017
Athens, Hellas



WORKSHOP
Research and Innovation activities in nanotechnology
concerning Energy Efficient Buildings

 GELCLAD www.gelclad.eu	<p>Jorge Corker Senior Researcher</p>	
Title:	Project Manager and Head of the Unity of Characterization and Certification of Granular Materials (UGRAN) at Instituto Pedro Nunes (IPN), Coimbra, Portugal	
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Project title:	GELCLAD - "Highly efficient cladding eco-panels with improved nano-insulation properties"	
Presentation title:	Development of a novel façade panel with nano-insulation properties for Energy Efficient Buildings	
<p>The GELCLAD project aims at creating a novel cost-effective, durable, industrialised and easy to install composite building cladding system, based on a single structured panel with excellent insulation properties. The GELCLAD façade panel shall be made from a functional polymer composite and an advanced foamable extrudable aerogel, produced using a co-extrusion/injection procedure, to deliver both the polymer framing skin and the aerogel core in a single all-in-one product. The product development is focused on using a low energy consumption ambient drying production technology for the making of the silica aerogel inner insulation core, along with lignin-based bioplastic resins and recycled polymers, such as rPVC, to substitute oil derived ones for the making of the outer skin frame panel (ecoWPC). Using a silica aerogel material capable of exceeding conventional insulation materials performance by 45% and by replacing virgin synthetic polymers, GELCLAD is being designed to be durable, easily demountable, reused and/or recycled after its service life, reinforcing its superior technical performance and sustainability profile.</p>		

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CV:

Jorge Corker holds a degree in Geology by the University of Coimbra and he is currently pursuing his PhD. Corker has been working with minerals, ceramics and building materials since the late 90's. He has a vast experience in several physical and chemical laboratory techniques dedicated to raw materials and products characterization, mostly related to nanomaterials. Specialized in materials science and engineering, Corker has worked at the Portuguese Technological Centre of Ceramics and Glass and at the University of Aveiro in Portugal. Apart from his current position at IPN, as the Head of the Unity of Characterization and Certification of Granular Materials (UGRAN) laboratory, accredited under NP EN ISO / IEC 17025: 2005, Corker has also been technical and scientific project manager for several EU FP7 projects dealing with thermal/acoustic insulation and building materials, including:

VIP4ALL - Highly Sustainable and Effective Production of Innovative Low-Cost Vacuum Insulation Panels for Zero Carbon Building Construction (FP7 R4SMEs, 606037)

ICECLAY - Highly efficient production of ultra-lightweight clay-aerogel materials and their integrated composites for building insulation (FP7 R4SMEs, 315548)

STOREPET – Development of PCM-based innovative insulating solutions for the Light-weight building sector (FP7 R4SMEs, 286730)

SILENTWALL - Production of an innovative Lightweight Ceramic Brick, with increased noise absorption capabilities and heat insulation (FP7 R4SMEs, 222212)

He is currently Project Coordinator of the H2020 EEB-01-2016 project GELCLAD: “Highly efficient cladding eco-panels with improved nano-insulation properties”, receiving funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 723425.

With a vast experience working on research projects dealing with advanced building materials, Corker is also a member of CEMMPRE - The Centre for Mechanical Engineering, Materials and Processes - CEMMPRE (Research Unit n° 285 of the Portuguese Foundation for Science and Technology), developing interdisciplinary research in the areas of Mechanical and Materials Engineering and other related areas. His main research themes involve minerals, building materials, ceramics, composites, thermal and acoustic insulation, nano materials development and characterization, waste recycling and processing and manufacturing technologies.

Selected communications and publications:

Zhuang, J., Ghaffar, S., Fan, M., Corker, J., “Restructure of expanded cork with fumed silica as novel core materials for vacuum insulation panels”, *Composites Part B* 127 (2017) 215-221.

Marques, I., Corker, J., “Applying ambient pressure drying aerogel for the development of a building superinsulation system”, *Euronanoforum 2017* (21 - 23 June 2017, Valletta, Malta).

Almeida, F., Corker, J., Ferreira, N., Fan, M., Caps, R., “Alternative low cost core systems of vacuum insulation panels designed for near zero-energy buildings”, *Ciência & Tecnologia dos Materiais*, Volume 29, Issue 1, January–April 2017, Pages 151-156.

Caps, R., Beyrichen, H., Almeida, F., Corker, J., “Investigations on Vacuum Insulation Panels based on Medium Sized Powders”, *International Conference on Advanced Buildings Skins*, 03-04 Nov’ 2015, Bern/Switzerland.

Corker, J., Gonçalves, M., “Development of bio-based thermo-regulating nanofibers by electrospinning” *Materiais 2015 International Conference*, Porto, Portugal, Jun’ 2015.

Corker, J., Gonçalves, M., “Innovative PCM-based fiber insulating solution for lightweight buildings” *Cincos 2014 Conference*, Porto, Portugal, Nov’ 2014.

Corker, J., Gamallo, P., “StorePET: PCM-enhanced fiber insulation for lightweight building solutions”, *European Energy Innovation Magazine*, Winter Edition, 2013.

Marques, I., Corker, J., Vieira, M.T., “Influence of addition of anodizing aluminium waste in thermal insulation brick red clay”, *1st International Conference on WASTES: Solutions, Treatments and Opportunities*, Guimarães, Portugal, Set’ 2011.