


Event:  
Date:  
Place:

**ENERGY in BUILDINGS 2016**  
Saturday November 12, 2016  
Athens, Hellas



#	<b>Skaropoulou Aggeliki</b> PhD-M.Sc Chemical Engineer	
Title:	Senior Researcher at NTUA	
Presentation title:	<b>Two-Component Layer for Retrofit with Insulating and Structural Properties</b>	
<p>During the last decade, many governments and international organizations have put significant effort towards energy efficiency improvement in buildings. These standards can be easily satisfied in new buildings but the refurbishment-projects of old buildings require a bigger effort. The energy efficiency of old buildings can be drastically improved by exterior wall panel installation. Beside legislations, building's insulation ensures a comfortable setting and restricts operational cost, since energy consumption for heating and cooling system is one of the major expense.</p> <p>Apart from insulation properties, in case of reconstruction or renovation, a retrofit panel should, also, offer structural properties. This work concerns the synthesis of a panel consisting of two layers based on the requirements of EU directives.</p> <p>The insulation layer is an aeroclay and its formation involves the mixing of clay, water and reinforcement agent, the freezing of the suspension and the freeze drying of the frozen gel. The final product is nontoxic, fire-resisting, easy to be produced and has a thermal conductivity around 0.04 W/mK which is similar to this of other commercial products.</p> <p>The structural layer is a geopolymer (also called inorganic polymer). Its formation involves a chemical reaction between an aluminosilicate material and a silicate solution in an alkaline environment and leads to a construction material with rapid strength development and improved durability. In this work, a geopolymer of reduced density is synthesized and used as a lightweight, durable, inflammable and structural element.</p> <p>Finally, the structural and the insulation layers are integrated in one compact layer in order to facilitate the assemblage of the panels. The procedure includes the casting of the geopolymer on the top of a prefabricated insulation layer. As it was found, the thermal properties and the performance of each individual layer were not affected by the integration process</p>		

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CV:

Dr Aggeliki Kyriaki Skaropoulou has studied chemical engineering at the National Technical University of Athens (NTUA) and graduated in 2002.

In 2007, she earned her M. Sc, in Science and Technology of Materials, an inter-departmental postgraduate course.

In 2009, she got her PhD thesis "Durability of limestone cement pastes, mortars and concretes exposed to sulfate attack". Within the framework of her thesis, the research project, in which she has participated are:

- Seismic performance of recently prepared reinforced concrete,
- Characterization of the historic mortars of the Laskari house in the archeological site of Mystras. Suggestion of the new compatible mortars,
- Synthesis of hydraulic calcium silicate and calcium aluminate compounds using low temperature techniques. Alternative ways to produce clinker,
- Durability of concrete at temperature 10-90oC. Use of concrete tanks for seasonal thermal storage.

For 4 years she worked in an industry that produce and commercialize paints, mortars and adhesives. Her main activities and responsibilities at R&D and QC departments were the quality control of products, the improving product design and the development of new, the testing of new additives, the product control and the conformity to European norms.

She is working as a senior researcher at the school of chemical engineers, at National Technical University of Athens, by participating in EU programmes:

- "Multifunctional facades of reduced thickness for fast and cost-effective retrofitting", Seventh Framework Programme. Her project concerns the development of thermal insulation materials form inorganic materials.
- "Green Integrated Structural Elements for Retrofitting and New Construction of Buildings", Horizon 2020. Her project concerns the development of a geopolymer – structural- layer from CDWs.

She has published more than 20 papers in international journals and conferences.