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## Advanced materials oriented to an improved energy efficiency in buildings

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Buildings are responsible for 40% of the total energy use and 36% of total GHG emissions within the EU. One of the ways of improving energy sustainability is increasing energy efficiency in existing buildings as annually just about 1% of the existing building stock is added as new buildings. Materials science offers solutions that when combined can offer energy savings in building sector. In this study, high reflectance coatings are combined with phase change materials with the aim of improving energy efficiency in buildings at an affordable cost. To solve this issue, a multifunctional pigment having a high total solar reflectance and a thermal storage capability has been manufactured. The high reflective property of the paint would reduce the amount of absorbed radiation while the thermal storage capability makes it possible to use the roof as an energy storage media. The thermal performance of the coating containing the multifunctional pigment was estimated and compared with a coating containing the unmodified pigment. For this issue a simulated experiment in which two boxes were covered with the coatings on their tops and heated with an infrared lamp was performed. The indoor air temperature and the interior temperature of the roof were monitored obtaining differences of 4°C.

### Biography

Estibaliz Aranzabe received a degree in Chemical Sciences in 1999 by University of the Basque Country. In 2000, she started working in IK4-TEKNIKER mainly involved in advanced fluids development and monitoring. From 2002, she worked in developing new sol-gel coatings and materials. Since 2012, she is the Head of Surface Chemistry Unit at Tekniker. She has broad international background and a large experience in being in-house Director of EU-FP7 Projects. Among others, she is in charge of the scientific coordination of the NANOPIGMY project.

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