



The ESA Business Incubation Centre (BIC) Portugal opened in November 2014 and is managed by the University of Coimbra's Instituto Pedro Nunes (IPN), in collaboration with Science and Technology Park at University of Porto and DNA Cascais. Local partners include the University of Coimbra, Comissão de Coordenação e Desenvolvimento da Região Centro (CCDRC), Portugal Ventures, FNABA, DNA Cascais, the University of Porto and several polytechnic institutes. The three ESA BIC Portugal host offices are located in Coimbra at IPN, in Porto at the Science and Technology Park of University of Porto, and in Cascais (near Lisbon) at DNA Cascais. Over the first five years, the ESA BIC Portugal will support 30 Portuguese start-up companies, providing a financial incentive along business and technical support, creating at least 240 local high-tech jobs. In total, the start-ups will receive €1.5 million as seed incentive and be able to tap into an additional €7 million in support.

Active Aerogels

Insulation for extreme temperatures



Website

Founded in 2012 by

- **Bruno Ramos de Carvalho**

Incubation period

03-06-2015 to 02-06-2017



space solutions

About Active Aerogels

Active Aerogels is a private owned company that produces and commercializes aerogels for several applications in space, oil & gas, aeronautics, building and wastewater treatment. Aerogel is a solid with unusual properties, such as ultra-light and very low thermal conductivity due to its high porosity. Aerogels can resist large temperature ranges (-250°C to 350°C), vibration and high vacuum and may be supplied in blocks, blankets or powder.

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The challenge

In space the aerogel can be used for thermal insulation on satellites, landers, rovers and launchers. In Oil & Gas aerogels can be used for pipeline thermal insulation. Aerogel can be used for pollutants adsorption namely wastewater and oil spill. In aeronautics, the aerogel plays an important role for its low density with outstanding thermal insulation performance.

Although knowing the high cost of aerogel for buildings it will become a potential solution in order to comply with new EU regulations on energy efficiency for buildings.

Active Aerogels is working on the aerogels development since 2005 mainly for space application such as Mars Rovers insulation. At moment, due to the product maturity we are going into other markets such as aeronautics, buildings and pipeline insulation.

Active Aerogels provides solutions for highly demanding thermal requirements and is namely looking to test new applications or to adapt aerogels to specific needs.

The solution

Aerogels are prepared by sol-gel technology which the most known bottom-up approaches to prepare nanomaterials. Sol-gel technology allows preparing materials in different shapes from fibres, powders, foam and monoliths. Our silica based aerogels are synthetic, porous, extremely flexible, ultralight materials offering exceptional properties suitable for highly performing insulation applications.

The thermal conductivity of our aerogel is $24 \text{ mW m}^{-1} \text{ K}^{-1}$ and since this material does not have the glass transition temperature it can be applicable between -250°C to 350°C .

Additionally, this aerogel is highly hydrophobic avoiding its degradation in contact with humid environments. The material can be applied for general thermal insulation, in space environments, buildings and pipelines. On the other hand, due to its high specific surface area they can be used as adsorbents for wastewater, oil, and others, for adsorption of

phenolic compounds and hydrocarbons removal.

