

Versatility of Nanomaterials in Commercial Applications

Carla Idely Palencia-Aguilar
Department of Civil, Enviro and Constr Engineering, University of Central Florida, USA

Two applications that used clays with particular sizes from 3Å to 5 Å where implemented in the dehydration of food and in ballast water treatment. The former allowed the concentration of vitamins, augmentation of inulin content, improvement of probiotics' bacteria count and preservation of more than 1000 products for periods longer than one year without employing chemicals. The latter contributed to destroy bacteria in ballast water and also to remove seawater in oil byproducts and recover their characteristics to be reused for the same application or as a lower grade product; important outcome specially during oil spills. The process consists of using clays as filters in a vacuum chamber and tuning the changes of temperature and pressure by trial and error until the maximization of desired characteristics are obtained. Results showed that vitamin content could increase at least 5 times more than the natural product for the same analyzed quantity, for inulin content 3 times more and probiotics' bacteria count up to 5 times more. For ballast water, with initial count at 1:1 dilution, 8 cells/g were found; after the clay nano-filter process at 1:100 dilutions, less than 100 cells/g were counted. For seawater and sediments at 1:100 dilutions before the treatment 1200 cells/g were found, while after the process at the same dilution, only 100 cells/g were counted. For the oil based components, different viscosities and seawater mixes of 50%-50% and 25% oil and 75% seawater were tested in a 12-hour and 24-hour cycle. Water removal results between 65% to 80%. The viscosities and seawater removal of the three studied oil based components determined the final applications.

Biography

Miss Palencia-Aguilar is an Engineer. She has completed 4 Masters degrees in Manufacturing Engineering, MBA, Finance and Environment. She has also 4 specializations in Management, Groundwater Modelling, Energy, Water quality and bio-indicators, and multiple courses in various engineering and management fields worldwide. She did research at Ècole des Mines de Paris for 10 years in special techniques and economics in sub-soil exploitations. Currently she is a PhD candidate at University of Central Florida. She has participated in exhibitions and as speaker in various conferences around the world for many years. She has also published various papers in topics such as agriculture, remote sensing, modelling and land used optimization, among others. She has been consultant for various companies in Colombia-South America and at international level. She has also been widely involved in social work and sustainable development.

Presenting author details
Full name: Carla Idely Palencia-Aguilar
Contact number: 5716371837
Twitter account:
Linked In account:

Session name/ number:
Category: Oral presentation