

The use of nanomaterial's applications in buildings and their contribution to supporting green technology

Associ. Prof. Dr. Ahmed Salah Eldin Shiba.

Associated Prof. Department of Architecture, Faculty of Engineering, Beni-Suef University, Egypt.

ashiba1979@yahoo.com

Dr. Hala Abdelmoez Mohamed

Assistant Prof. Dep. of Arc. , Higher Technological Institute in the 10th of Ramadan - 6 October City Branch - Egypt

hala_waheed2004@hotmail.com

Dr. Zakarea Ahmed Abd Elfattah

Assistant Prof. Department of Architecture, October High Institute for Engineering and Technology, Egypt.

zakaria.ahmed@ohi.edu.eg

Abstract

Nanotechnology is one of the most active research areas in both field's novel science and useful applications which have gradually established great success in the past two decades. Recent researches on nanomaterial and nanotechnologies foxed on the potential use of these materials in various fields such as medicine, construction, automobile industry, energy, telecommunications and informatics. This is due to the special characteristics of materials at the nano scale. It has been demonstrated that nanotechnology generated products have many unique characteristics, and can significantly fix many field problems.

Nanotechnology added changes to building material properties that can improve the current construction materials to be lighter, stronger structural composites, low maintenance coatings, better cementations materials, and thermal insulation. Because size of the particles is a critical factor, the material properties significantly differ at the Nano scale from the larger scales.

Recently Nanomaterials and Nanotechnologies play a major role in architectural design; building materials combined with nanotechnology became smaller, lighter, and work better than what is possible with conventional materials .

Many distinguish applications have been established in architecture and construction industry , for example improving the performance of traditional building materials, both structural materials such as (concrete, steel and wood) and nonstructural materials such as (glass , coating, and Air purification).

This paper Presents number of study cases for Nonstructural Nanomaterial applications specially coating materials and air purifying applications (Lotus effect, Photo-catalysis self-cleaning, Easy to clean surfaces, and Air purifying applications) .

Demonstrating also the importance of Nanotechnology applications becoming green to enhance the Ecological performance of buildings, and to decrease energy consumption rates supporting continuity and Green Architecture.

Key words:

Nanotechnology, nanomaterial's, nan architecture, green technology, sustainability.