The Impact of Using Nanotechnology to Improve the Silica to Make Self Cleaning Glass

Alyafei, Faisal (School: Ahmad Bin Hanbal Secondary School)
Sawalha, Mahmoud (School: Ahmad Bin Hanbal Secondary School)

Research problem: The Accumulation of dust and moisture on a glass surface is a challenging problem especially in countries with harsh environments. The current solutions suffer many drawbacks such as cost, durability and safety. outer surface of the glass gets dirty and loses its transparency. A new approach should be considered to overcome these challenges Objective of the research: 1. Develop a natural material to protect the glass from dirt. 2. The preservation of the characteristics of glass and efficiency after being used in different ways. Research method: The research was conducted based on an experimental approach that relies on producing a substance that could be changed from its solid state into a liquid, using Nano-technology Research tools: Experience for the synthesis of an active ingredient in the coating system which consists of a sol-gel of silica precursor and aerogel powder. An Interview with Dr. Khaled Saud, a professor at the University of Virginia and the Qatar Foundation Research results: The development of Silica, a natural material, and adding some substances in order to create a water-proof layer on the surface of the Glass Minimize the cost of the substance to be 7 Qatari Riyals per 1 m2 of glass. Build experimental building models to measure the impact of Silica on the glass surface. The developed Silica is waterproof and results in changing the angle of the drop of water to more than 90 degrees. The substance does not affect the glass characteristics: transparency, hardness and resistance of chemicals.

Awards Won: