CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY

Name(s)

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Project Number

S1802

Project Title

Biomimicry: The Effects of the Lotus Effect in Designing Nanoscale Surfaces in Products

Abstract

Objectives/Goals

We wondered if nanoscaled surfaced coat would benefit in design is we destructively tested plants exhibiting hydrophobic tendencies (e.g. the lotus effect).

Methods/Materials

A water/stain material resistant nanoscale surface engineered lab coat and several plants exhibiting the lotus effect were tested using common household products (i.e. ketchup, milk, ect.).

Results

We tested several plants exhibiting the same lotus effect as the lab coat to see if this biomimicry could aid scientists and engineers in designing more effective nanoscaled surfaced products.

Conclusions/Discussion

We found that the nanoscale surfaced lab coat was impervious to most common household substances after one washing. However it appears the motor oil destroyed the lotus effect on the engineered surfaces even after bleaching. We found that our plant surrogates effectively predicted this shortcoming.

Summary Statement

Biomimicry can be effectively used to design products.

Help Received

Mr. Gaughen's Nanotechnology A class taught us the basics of nanoscience; Adopted 'Lotus Effect' protocol in National Science Teacher's Association (NSTA); 'Nanoscale Science' (2007) pages 61-76.