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Data Article

Data on photo-nanofiller models for self-cleaning foul release coating of ship hulls

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ABSTRACT

The data presented in this article are related to the research article entitled "Smart photo-induced silicone/TiO_2 nanocomposites with dominant [110] exposed surfaces for self-cleaning foul-release coatings of ship hulls" (Selimet al., 2016) [1]. This article reports on successfully designing and controlling TiO_2 spherical single crystal photo-nanofillers and indicating evidence of fouling resistance after stimulation through UV radiation exposure. These data also reveal that the influence of well-dispersed spherical TiO_2 nanoparticles (NPs) into the polymer matrix surface features on the prepared fouling release (FR) coating. Single crystal TiO_2 nanospheres have played a large role in the scenario of photocatalysis due to its cost effectiveness, inert nature and photo stability. The model output and the surface and mechanical behavior data of the fabricated UV-irradiated silicone-based FR nanocoatings are made publicly available through analyzing nanocomposite

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topology, superhydrophilicity and self-cleaning efficiency in order to enable critical analysis of the tailored model. It also investigates the photo-bactericidal effect confirmed through biofilm coverage data disability. The modeled nanocomposites were subjected to comparable studies with other published models so as to understand how different UV-irradiated nano-scale parameters propagate and affect bulk film response.

Specifications Table

Subject area	**Chemistry**
More specific subject area	**Nanomaterials sciences, marine Antifouling paints**
Type of data	**Table and figure**
How data was acquired	**XRD, Electron microscopy images, Static contact angle meter, survey**
Data format	**Analyzed**
Experimental factors	**Single crystal TiO_2 nanospheres were mixed with polydimethylsiloxane (PDMS) in various ratios and the nanocomposite films were cured via hydrosilation mechanism.**
Experimental features	**Intensive Characterization of the TiO_2, nanocomposites surface wettability**
Data source location	**NIMS/EPRI (Japan, Egypt)**
Data accessibility	**Within this article**

Value of the data

- The huge potential of spherical single crystal TiO_2 photocatalyst by reinforcing a composite material and effect of self-cleaning behavior are demonstrated in order to open up new possibilities in various fields.
- The data are useful for comparing purposes when addressing the influence of photocatalyst for reinforcing and environmental friendly antifouling.
- The importance of silicone/TiO_2 nanocomposite manufacturing practice in final performance is demonstrated.
- The data are valuable for the nanomaterials synthesis and foul release coating design.

1. Data

Four figures and one table were provided to show the PDMS/spherical TiO_2 nanocomposite characterization and investigation of data for applying as environmentally friendly marine antifouling paints. A schematic representation of fouling resistance mechanism of the UV-irradiated silicone nanocomposites is presented here.

2. Experimental design, materials and methods

The data on the tailored nanocomposite surface and fouling resistance properties are obtained using various analytical techniques. The wetting characteristics of the prepared nanocomposites were studied