Titanium Dioxide Nanoparticle Coatings May Be Used to Coat Solar Panels to Make Them Safer for Birds

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Solar energy is clean and renewable and has unlimited potential in meeting the energy need of the world. Currently, however, solar panel farms have an unintended, adverse ecological effect on certain avian species, including the endangered birds. It is assumed due to the blue light reflectivity; the birds mistake the solar panels as a body of water and crash onto solar panels leading to death by burning from the concentrated heat from the solar panels. In this study, anti-reflective coating titanium dioxide and silicon dioxide nanoparticle films were prepared to coat glass surface by using the sol. gel process and the dip coating method. The anti-reflective coatings were evaluated for their light absorbance and reflectivity. It was found that the titanium dioxide coating significantly increased light absorbance. Three layers of titanium dioxide coating increased the light absorbance by 200% fold. Silicon dioxide coating did not increase light absorbance. The titanium dioxide nanoparticle coating selectively decreased blue light reflectivity with about a 26% reduction in the blue light reflectivity. The results indicated that the titanium dioxide nanoparticle coating had great potential for use to coat solar panel surface to increase their energy conversion efficiency and make them safer for birds.

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