Glow-in-the-Dark Cement Could Illuminate Dark Highways Without Electricity

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Glowing Bike Path The cement is designed to take in solar energy, which can be emitted at night as light.

Scientist José Carlos Rubio wanted to see if he could figure out a way to illuminate highways and roads at night – without using electricity. He soon discovered a truly innovative solution; he found that by altering the fine structure of cement, he could design a variety that appears to glow in the dark.

Rubio, who works at the Universidad Michoacana de San Nicolas de Hidalgo, has been researching the cement for 9 years. He said the first problem to tackle was the fact that cement is opaque. He started to dig into the cement-making process. In one way of creating cement, it starts out as dust mixed with water. As it begins to gel, crystal flakes form. The flakes are an unnecessary byproduct, so Rubio discovered a way to change the microstructure of cement so they wouldn't be present. This results in a thrilling effect: his cement without crystals can absorb solar energy and emit it as light at night.

According to Rubio, the light-emitting product could last for 100 years and provide light for around 12 hours at night. The intensity of light emitted can be changed so it doesn't overwhelm drivers or cyclists. The light glows as a cool green or blue.

Not only would the cement save power, but the process to create it is environmentally friendly as well. During manufacturing, the only thing released is water vapor.

There are a wide variety of commercial applications; according to Rubio, four billion tons of cement were created throughout the world in 2015, and the glowing cement can be used not only for streets but buildings as well. The technology could even be used in plaster. According to the publication *Investigacion y Desarrollo*, Rubio's research has reached the commercialization phase.