
Italian Clam solar Container

Can giant clams turn photons into solar energy?

But they are nowhere near as efficient at turning photons into chemical energy as giant clams. These creatures' fleshy, colorful mantle--the wavy, psychedelic-patterned tissue sandwiched between their shells--could even inspire more efficient solar energy technology. Nautilus Members enjoy an ad-free experience. Log in or Join now .

Are giant clams attractive?

Log in or Join now . Unfortunately, there are a lot of other things people find attractive about giant clams: There's the spectacle of their proportions--the largest species of giant clam, *Tridacna gigas*, can grow almost five feet in length and weigh around 700 pounds--which leads some people to repurpose the shells as decorative ornaments.

Do giant clams have a high quantum efficiency?

In a 2024 study, Yale University biophysicist Alison Sweeney and her colleagues note that giant clams' quantum efficiency--how well they convert photons to electrons--was 67 percent. (Leaves in a tropical environment, by contrast, work at 14 percent quantum efficiency.)

Why do giant clams have iridescent insides?

Giant clams' iridescent insides form a powerful system for taking in sunlight. Join Our Community of Science Lovers! I agree my information will be processed in accordance with the Scientific American and Springer Nature Limited Privacy Policy.

A theoretical model for the illumination of photosynthesizing algae in giant clams suggests principles for high efficiency collection of sunlight. Crops on a farm capture only ...

In the shallow tropical reefs off Palau lie what at first glimpse look like unremarkable, albeit huge, clams in the genus *Tridacna*. But a peek at the undulous innards ...

The clam keeps the algae safe, and the algae nourish the clam via their photosynthesis. Translucent cells in the clam's flesh called iridocytes scatter incoming light, ...

By comparison, the same algae species living in corals without the benefit of the clams' light-scattering iridocytes are no more energy efficient than our 20%-efficiency solar ...

Solar panel and biorefinery designers could learn a thing or two from iridescent giant clams living near tropical coral reefs, according to a new study. This is because giant clams ...

The insights gained from studying giant clams could revolutionize sustainable energy technology. By incorporating elements inspired by these efficient solar energy systems, ...

Giant clams have the potential to revolutionize optimized solar storage in 2025. However, researchers must engineer a viable innovation for capturing and storing solar power ...

This unique way in which giant clams manage light could inspire advancements in solar technology. Current light-harvesting technologies, such as photovoltaics and algae biofuels, ...

Notably, the clams' structure and adaptive behaviors work in harmony to create an efficient light-collecting system that far surpasses the capabilities of traditional solar panels. ...

