

Harnessing Bioengineered Solar Absorbers for Eco-Friendly Thermal Solutions

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Bioengineering is the scientific approach that combines engineering principles with the natural sciences to create modified or enhanced systems that address specific challenges. In the context of solar absorbers, bioengineering plays a role in developing solar absorption systems by studying plant mechanisms like photosynthesis, where solar energy is used as the sole energy source to produce a desired by-product. Applying principles derived from these biological processes, along with conventional solar technology, enables the creation of bioengineered solar absorbers for thermal applications. For instance, Yang et al. [1] identified four biochar-based solar absorber variants derived from biomass extracted from *E. prolifera*, a resource abundant in many coastal regions. The carbonized *E. prolifera*, with its hierarchically porous and tubular nanostructures, effectively captures solar energy, exemplifying how bioengineering can be applied to develop sustainable solar-thermal solutions.

Keywords: Bioengineered, Solar absorber, Sustainable thermal applications

References

[1] Yang, L. et al., 2019. Sustainable biochar-based solar absorbers for high-performance solar-driven steam generation and water purification. *ACS Sustainable Chemistry & Engineering*, 7(23), pp. 19311-19320.

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