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DEPARTMENT OF
SCIENCE & TECHNOLOGY
सत्यमेव जयते

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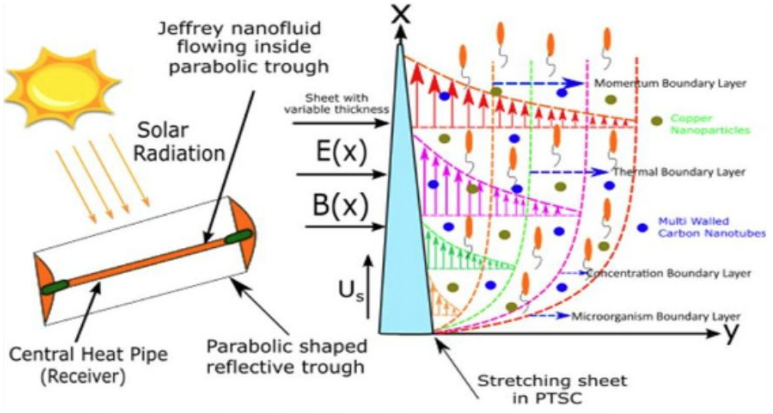
PENDING

(IN202411039475) Method for entropy and heat-transfer analysis in solar collector with ann and jeffrey hybrid nanofluid



NEED

Optimizing solar collector performance by enhancing heat transfer and fluid stability can greatly improve efficiency. This method integrates nanotechnology and artificial intelligence to refine energy systems.

MARKET ANALYSIS

The global solar energy market is expected to grow at a CAGR of 20% until 2033 (source: International Energy Agency). The need for efficient energy systems, driven by renewable energy adoption and sustainability goals, boosts this market.

TECHNOLOGY OVERVIEW

The method combines artificial neural networks (ANNs) with Jeffrey hybrid nanofluids and motile gyrotactic microorganisms to optimize heat transfer and fluid stability in solar collectors. The ANN models predict and enhance entropy generation and thermal performance, boosting efficiency in solar energy systems.

Target Industries

1) Solar energy system manufacturers, 2) Nanotechnology research platforms, 3) Renewable energy companies focusing on heat optimization solutions.

TECHNOLOGY KEY FEATURES

Hybrid nanofluids, gyrotactic microorganisms, artificial neural networks (ANNs), entropy generation, heat transfer enhancement, fluid stability, optimization under solar irradiation, nanoparticle dispersion, computational modeling, and predictive analytics.

AT A GLANCE

- SDG 7 (Affordable and Clean Energy), SDG 9 (Industry, Innovation, and Infrastructure), SDG 13 (Climate Action)

Read more here

Technology is available for licensing/ co-development.

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