

Design of Polymer Optical Fiber Luminescent Solar Concentrator

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Abstract: *The design of Polymer Optical Fiber Luminescent Solar Concentrators (POF-LSCs) offers a novel method for improving solar energy capture and utilization. This study investigates the development and optimization of POF-LSC systems, emphasizing the design of polymer optical fibers, selection of luminescent materials, and performance evaluation. By integrating flexible, low-cost polymer optical fibers with luminescent compounds, this research aims to enhance solar energy concentration and conversion. The paper presents a detailed analysis of the system's design parameters, material choices, and overall efficiency in converting solar energy. The findings demonstrate the promising potential of POF-LSCs for both residential and commercial applications, providing an adaptable and cost-effective solution for increased solar energy harnessing. Future research directions are also discussed to further advance the field of luminescent solar concentrators.*

Keywords: Polymer Optical Fiber, Luminescent Solar Concentrator, Solar Energy, Energy Conversion, Optical Fiber Design