

Micromachined Fresnel Surface Focuses Light Precisely

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Researchers at Tianjin University in China have shown that an adaptation of the Fresnel lens can boost PV output up to four-fold. Y. Cheng, X.D. Zhang and G.X. Zhang of the State Key Laboratory of Precision Measuring Technology and Instruments have engineered an array of microscopic cones, rather than concentric ridges, that can focus light at a precise depth within the target cell.

The 300 percent power boost falls off quickly as cell resistance rises with temperature. The team claims the improvement in output nevertheless offsets the cost of the micromachined Fresnel front surface, making the technique economically viable.

The findings were published in the International Journal of Precision Technology, 2013, volume 3, number 4.