

Abstract Submitted
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Inverted Pyramid Texturing of Si by Single Exposure Three-beam Interference Lithography B. SUMMERS, M. LANGHOFF, K. GHOSH, Missouri State University — Increasing energy demands combined with environmental concerns prompts the need for cost-efficient solar cells. One way in which this can be achieved is by etching an inverted nano-pyramid texture into the silicon substrate thereby reducing the requisite amount of material. This is due to the ability of altering the pyramid size such that it corresponds to specific wavelengths, which results in higher light trapping efficiency. These inverted pyramids can be fabricated using three-beam lithography to create the desired hole/dot photoresist pattern in order to etch the substrate. The process can be done as a single exposure by aligning two dielectric mirrors and the sample at specific angles with respect to one another and the incoming laser beam. Using this method, nanostructures of Si and wide bandgap oxide semiconductors such as ZnO and NiO will be fabricated. Detailed results will be discussed in this presentation. This work is partially supported by National Science Foundation (DMR- 0907037).

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