

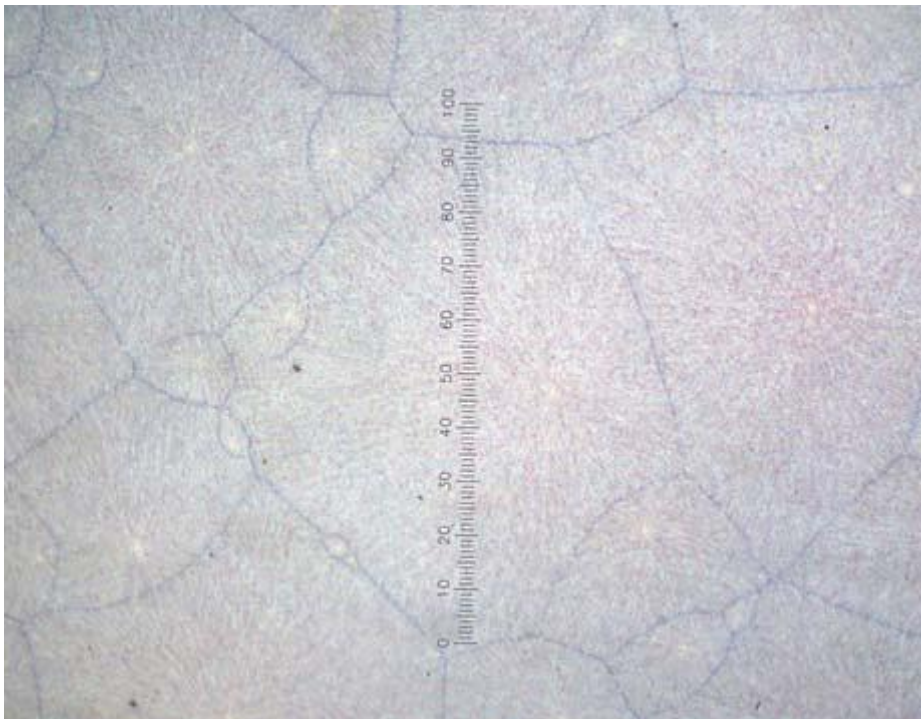
Ultra Large Grain Silicon Solar Cells

Solar cells that directly convert sunlight to electricity are an increasingly important technology to help solve the world's energy problems. However, the efficiency of such solar cells needs to be improved.

An inter-disciplinary engineering team at the University of Arkansas has developed a new nanotechnology that can produce grains in amorphous silicon that are up to 30 times larger than grains produced by traditional methods.

The larger amorphous silicon grain size increases the efficiency of solar cells by reducing the loss of electrical current due to the inhibiting effect of the grain boundaries. In addition, the temperature at which the grains are grown is reduced from traditional methods – crystallization occurs at 350 degrees C rather than the 400+ degrees C usually required. The lower temperature means reduced energy cost for manufacture and a faster energy pay-back time for the solar cell.

This large grain, flexible, polycrystalline silicon film technology also has uses in the field of thin-film transistors LCDs, and biosensors.



20 μ m

The invention is patent pending and available for licensing.

See also: Zou, M., Cai, L., Wang, H., and Brown, W., [Nano-Aluminum-Induced Crystallization of Amorphous Silicon](#), *Materials Letters*, Vol. 60, No. 11, pp. 1379-1382, **2006**.

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