

gate/high-k/Ge transistors were fabricated on top of standard 2D IC with several layers of backend devices and interconnects above Si CMOS transistors. Such 3D architecture mimics the high efficiency and low power neurons in bio-system. The importance of power consumption, high-k dielectric small bandgap channel transistor and 3D integration were also reported by "The New York Times" at Dec. 15, 2008.

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◆ **Color Solar Cell**

Engineers at Lof Solar Corp, a Hsinchu Science Park based solar cell manufacturer in Taiwan, have developed technologies which make solar cells colorful while maintains extremely high conversion efficiency. The heart of the technologies is to employ nano-scale structures which controls and manipulates the incident sunlight. As a result, most of the photons will contribute to power generation while only few photons with specific frequencies will be reflected and give colors to the cells. Currently, Lof Solar provides at least ten different colors for their products with extremely high efficiencies. Fig 1 shows five different color solar cells which will be mass produced Q1 this year. Fig 2 shows SEM micrograph of the top view of the color solar cells.

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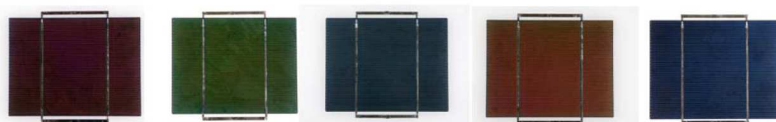


Fig.1 Examples of Lof's High Efficiency Color Cells

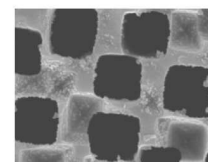
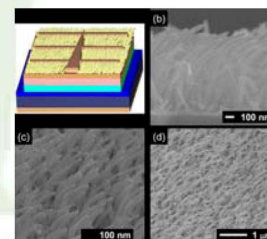


Fig.2 SEM micrograph of a color solar cell (top view)

◆ **Highly-Oriented ITO Nanocolumns**

Highly-oriented ITO nanocolumns are prepared by glancing-angle deposition with nitrogen. The tapered column profiles, which function as a graded-refractive-index layer, offer superior antireflective characteristics. The nanostructured material serves as the conductive antireflective layer for GaAs solar cells, demonstrating a viable efficiency-boosting strategy for next-generation photovoltaics.

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◆ **Sub 100nm PLGA Nanocapsules Reversed Cancer Drug Resistance to Paclitaxel**

Stabilizer free sub-100nm PLGA nanoparticles was prepared that successfully encapsulated paclitaxel in the core compartment. The derived water-soluble drug loaded nanocapsules effectively uptake by drug resistant cancer cell line and significantly sensitize cancer cells for chemotherapy. The surface function groups will enable further conjugation for future combination of targeting therapy moiety.

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