Bringing low-cost solar panels to the market

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In just one hour, the Earth receives more than enough energy from the sun to meet the world population's electricity needs in an entire year. Tapping that vast power output efficiently and at low cost remains a challenge, but new technologies could change that. The cover story in *Chemical & Engineering News (C&EN)*, the weekly newsmagazine of the American Chemical Society, explores whether emerging solar technologies could soon break into the market.

Mitch Jacoby, a senior correspondent at *C&EN*, notes that about 90 percent of solar cells installed today on rooftops and in panel arrays are based on silicon. But several factors limit the material's use. It's expensive and doesn't absorb sunlight strongly, so a relatively thick and brittle layer is needed. These traits make it rigid and heavy, and limit its applications.

To overcome these limitations, scientists are making lower-cost and more flexible alternatives. Emerging solar technologies include dye-sensitized solar cells, organic photovoltaics, quantum dot cells and perovskite cells. Most of these developments can't yet match silicon in its efficiency at converting light energy to electrical output, but some companies expect that their lower costs could more than make up for the difference. Perovskite photovoltaics are the closest so far to rivaling silicon's efficiency. But scientists would need to overcome additional technical challenges before scaling up and giving silicon a run for its money.

More information: Commercializing low-cost solar cells,

cen.acs.org/articles/94/i18/fu … ost-solar-cells.html

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