

Noted Solar Expert Updates Caltech Associates on Renewable Energy

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Pasadena, Calif—What energy solution could possibly come close to providing the 14 terawatts of power that the world consumes? Nathan Lewis, the George L. Argyros Professor and professor of chemistry at Caltech, described one possible solution at a dinner for Caltech Associates at Caltech's Athenaeum.

From coal to windpower, dams to geothermal energy, almost all potential energy sources yield too little power or generate high levels of greenhouse gasses. Lewis demonstrated to guests that nuclear power has its issues: in order to keep up with current and future demand we would need to build 14,000 nuclear power plants, or one per day for 39 years. He also ruled out exclusive reliance on fossil fuels such as coal, even if adequate supplies were available. Burning fossil fuels raises carbon dioxide (CO₂) levels in earth's atmosphere, contributing to global warming and impacting life on earth. At current rates of CO₂ production, temperatures could rise about 5-10°F in 30-50 years, possibly radically affecting human life.

Solar power, Lewis says, is the solution. The sun gives us 120,000 terawatts of power and more energy in one year than humans have consumed in total.

Lewis' research group may be close to solving a longstanding problem with solar energy: solar cells don't yet store energy effectively for distribution after sunset. Using artificial photosynthesis technologies, they are developing solar cells built from inexpensive materials that can both absorb and store energy.

"I was surprised to learn that all the approaches to supply renewable energy that I was familiar with were so inadequate as a percentage of the current energy usage," said Caltech Alumnus Don Pinkerton (BS '57). "Lewis made it clear that solar energy is the only source large enough to do the job, and that we have to have energy storage along with energy capture."

"We have a long way to go to solve the energy problem, so we better do all the conserving that we can—now—so we do not run out of energy before they come up with the solution," said Pinkerton.

For more information about the Associates and their events and programs please visit associates.caltech.edu/ or contact the Associates at 626-395-3919.

About the Associates: Founded in 1926, the Associates is a support organization for the California Institute of Technology (Caltech) with over 2,300 members throughout the United States and abroad - a diverse cross section of members of the local & business community, Caltech alumni and faculty, and philanthropists.

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