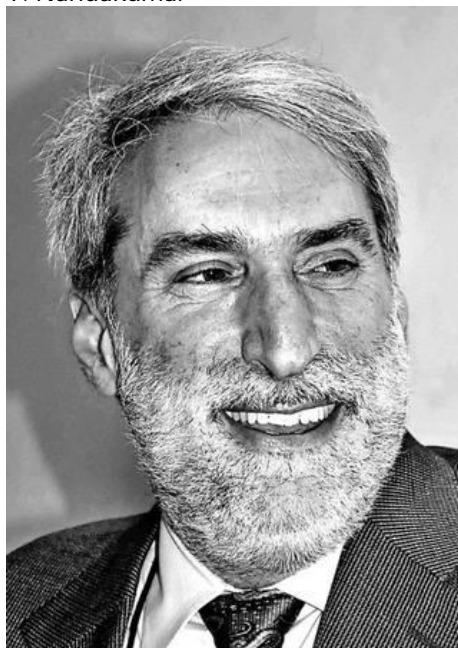


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**Taking a leaf out of nature**

T. Nandakumar



In 2010, when Daniel Nocera, a professor at the Massachusetts Institute of Technology in Cambridge, embarked on a novel project at his laboratory, he was taking a leaf out of nature.

A year later, he and his team had developed an 'artificial leaf' that is neither green nor grows on trees, yet mimics nature functionally to convert sunlight into chemical fuel, as in photosynthesis.

On Friday, when Mr. Nocera took to the stage on the CSIR-NIIST campus here to address a gathering of scientists and researchers, the audience listened with rapt attention.

The leaf, as revealed in the slide show presented by Mr. Nocera, is nothing but a silicon wafer with a thin film coating of catalysts, cobalt on one side and a nickel-molybdenum-zinc alloy on the other. The wafer when dipped in a beaker and exposed to sunlight releases bubbles of hydrogen and oxygen from the water.

The beauty of the leaf, as Mr. Nocera explains, is its simplicity. "You just drop it in a glass of water, and it starts working. It needs no external wires, uses abundantly available materials and can use any water source," he told *The Hindu* on the sidelines of a symposium on chemistry.

Fast forwarding to the future, he sees a time when scientists come up with a mechanism to capture the gases released by the wafer so that they can be stored for use in a fuel cell that generates electricity while combining them once again into water.

Mr. Nocera says the artificial leaf is a technology demonstrator. "We have proved that it is possible to generate hydrogen from water using sunlight." Ultimately, he foresees a time when large-scale manufacturing would make the device cheap enough to compete with other energy sources like coal and fossil fuels.

Mr. Nocera says the system is relevant to a country such as India with highly distributed energy needs. Ratan Tata, chairman of the Tata Group, has expressed interest in the technology. "Both of us believe that someday, the world will be powered by sunlight and water," he says.

He says the leaf will ultimately help produce clean, cheap hydrogen from sunlight and water, enabling families in poor countries to produce their own fuel.

***Daniel Nocera and his team have developed an 'artificial leaf' that is neither green nor grows on***

*trees.*