

*Fostering New  
Ways to “Green”*

## PONISSERIL SOMASUNDARAN

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Ask Ponisseril Somasundaran to say something in Hindi and he will jokingly beg ignorance aside from “a few common bad words.” Ask him what he thinks “sustainability” means, though, and he will quote the Hindu tenet of *nishkam karma*, or selfless action, that entails making sacrifices today for the sake of the future.

A world leader in surfactant science, Somasundaran has used his expertise to take on problems as wide-ranging as the enrichment of scarce minerals from ultra-lean ores, to the impact of cigarette smoke on lungs, to the behavior of nanoparticles. His current mantra, however, is sustainability.

“Sustainability has several different meanings,” said Somasundaran. “It is like the four blind men describing an elephant.” In that Sufi tale, four blind men each disagree about the true nature of an elephant because each feels a different part of the animal. Like those men, but with his eyes wide open, Somasundaran is approaching sustainability from several perspectives.

“There is a fundamental disconnect in the sustainability movement when it comes to consumer products,” he said. “An increasing number of people are choosing products based on third-party green certification, but many of these labeling programs give little weight to the full scope of a product’s lifecycle, from manufacture and shipping, to use and disposal.”

An example is liquid soaps and detergents, which contain large amounts of water. Somasundaran’s approach has been to reduce the amount of water in these products to lower the amount of packaging they require and the amount of fuel needed to ship them. He has applied a similar water-saving approach to mineral processing and mine tailing treatment by developing chemicals that require less water consumption.

More recently, Somasundaran has begun to focus on agriculture, which is notorious for its enormous demand for water. Even modest savings in agricultural water use could translate to huge gains globally. Using cellulose nanoparticles, which naturally curl to trap droplets of water, he is trying to develop a targeted release mechanism to water just the roots of crops and only when the soil is too dry or when high temperatures threaten crops.

His next target may be the carbon footprint. Somasundaran is convinced that focusing solely on carbon is far too narrow. “We need to broaden our notion of what is sustainable,” he said. Then, perhaps, we will all be able to see the entire elephant.

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