

New method for recovering pricey nanoparticles

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Solar panels, flexible displays, and other futuristic electronics made with nanoparticles may become more affordable thanks to a new method that recovers the pricey particles for reuse.

Scientists are reporting first use of a new method that may make it easier for manufacturers to recover, recycle, and reuse nanoparticles, some of which ounce for ounce can be more precious than gold. The method, which offers a solution to a nagging problem, could speed application of nanotechnology in new generations of solar cells, flexible electronic displays, and other products, the scientists suggest. Their study appears in ACS' *Langmuir*.

Julian Eastoe and colleagues point out that scientists are seeking better ways to recover and reuse nanoparticles, which are barely 1/50,000th the width of a human hair. Without that technology, manufacturing

processes that take advantage of nanoparticles' unusual properties might be prohibitively expensive. Recovering and recycling nanoparticles is especially difficult because they tend to form complex, hard-to-separate mixtures with other substances.

Eastoe and colleagues describe the development of a special type of microemulsion -- a mixture of oil and water (mayonnaise is an edible emulsion) -- that may solve this problem. In laboratory tests using [cadmium](#) and [zinc](#) nanoparticles, they showed how the oil and water in the microemulsion separated into two layers when heated. One layer contained nanoparticles that could be recovered and the other contained none. The separation process is reversible and the recovered particles retain their shape and chemical properties, which is crucial for their reuse, the scientists note.

More information: "Recovery of Nanoparticles Made Easy", *Langmuir*.

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