



“We need a large enough quantity to recycle indium”

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PHOTOGRAPHY RAMON HAINDL

As a professor of recycling, I'm always on the lookout for new materials that we can recycle. About ten years ago I became aware of indium, a rare, silvery-white, soft, heavy metal that is about as common in the earth's crust as silver. At that time, indium was scarce on the world market and demand was increasing. That's because in conjunction with tin indium has two special properties: It is conductive as well as transparent, and it becomes a highly efficient semiconductor for LCD flat screens, which took the world by storm around the turn of the millennium. Today it is found in almost all televisions, computer screens, and touch screens. It's used in smartphones as well.

As indium became scarcer, prices rose, and I was commissioned by the then-leading flat-screen manufacturer and a large electronic waste recycler to develop a re-

covery process. We succeeded from a technological standpoint, but our process is not used commercially. China, the largest indium supplier, suddenly threw three years' worth of global production onto the market—around 2,000 tons.

The prices nosedived, and with them the willingness to invest in our recycling technology. However, I am sure that indium will be recycled in the future. The only question is when this will become economical.

Dr. Daniel Goldmann is a professor at Clausthal University of Technology. He heads the Institute of Mineral and Waste Processing, Waste Disposal and Geomechanics. He and his team have worked on ways to recover indium.

Demand is expected to increase in the years ahead. More and more areas of life are becoming “smart” and the demand for screens is rising. Indium is also used in the latest photovoltaic systems. However, there is still a lack of used devices. We need a large enough quantity to make the process worthwhile. Until now, only 45 percent of electronic waste has been recycled in Germany, and the rate is even lower internationally. In my more than 35 years of recycling research I have dealt with many aspects of recycling. I'm now viewing it from the standpoint of behavioral psychology: How can we motivate people to hand in their old electronic devices?