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IIT-Delhi researchers develop zero-emission technology to manage and recycle e-waste to wealth

# IIT-Delhi researchers develop zero-emission technology to manage and recycle e-waste to wealth

Team awarded SRISTI-GYTI Appreciation for 2020



E-waste is one of the fastest-growing waste streams with an annual growth rate of 3-5%. India is the third-largest producer of e-waste and has generated 3.23 MMT e-waste in 2019 alone. Image Source: Unsplash

A sustainable technology to tackle e-waste has been developed by the Indian Institute of Technology, Delhi, will cater to the need of Smart Cities, Swachh Bharat Abhiyan and Atmanirbhar Bharat initiatives.

This technology is an outcome of a project funded by the Department of Science and Technology and has been included for a scale-up supported by the Office of Principal Scientific Advisor (PSA), Government of India under the Delhi Research Implementation and Innovation (DRIIV) initiative.

India is the third-largest producer of e-waste and has generated 3.23 MMT e-waste in 2019 alone. India's rising consumerism and paltry e-waste management ecosystem have placed us in a vulnerable state. Therefore, unregulated accumulation, landfilling, or inappropriate recycling processes poses a severe threat to human health and the environment.

On the contrary, e-waste can also be considered an urban mine for metal recovery and energy production.

A research group led by K.K. Pant of the Catalytic Reaction Engineering Laboratory at the chemical engineering department of IIT Delhi has adopted a three-step process that involves pyrolysis of e-waste, separation of metal fraction and recovery of individual metals.

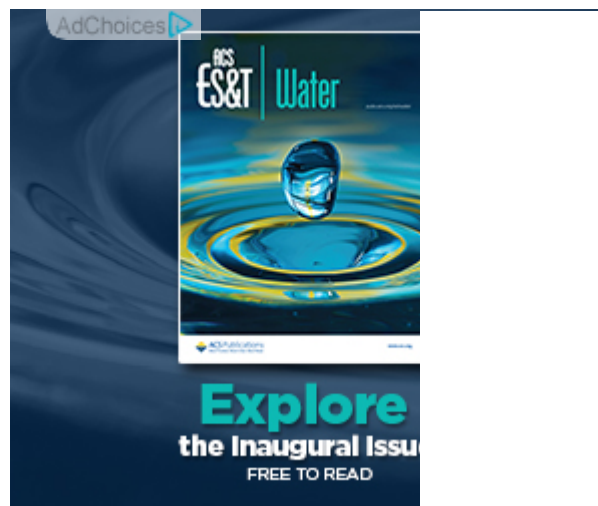
"Electronic waste (e-waste) generation is inevitable and if the problem is not addressed now, it will lead to mountains of solid waste sooner or later. The technology pioneered by our research group is

an integrated approach that will provide an environment-friendly solution to treat e-waste with the added advantage of metal recovery and fuel production. We have successfully demonstrated the application of our technology for recycling the Waste Printed Circuit Boards (WPCBs) of computers and mobile phones - a highly complex part of any e-waste,” Pant said.

“Therefore, the developed technology can be employed for recycling all types of e-waste as well as plastic waste, and it does not emit any toxic chemicals to the environment. Besides providing a sustainable solution for e-waste recycling, successful implementation of this technology has the potential to generate large number of jobs in the waste recycling industry,” he said.

The team was awarded the SRISTI-GYTI (Gandhian Young Technological Innovation) Appreciation for 2020 and several other awards in the past five years.

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