

Turning tyres into steel no fairytale

JULIE HARE THE AUSTRALIAN AUGUST 07, 2013 12:00AM



Professor Veena Sahajwalla in her lab at the University of NSW in Sydney on Thursday. Picture: Nikki Short Source: The Australian

VEENA Sahajwalla has mastered the engineering version of the Brothers Grimm fairytale *The Frog Prince*.

She takes ugly waste materials destined for landfill, gives them the alchemist's kiss of life and produces beautiful, valuable and useful new materials.

And Professor Sahajwalla, director of the Centre for Sustainable Materials Research and Technology (SMaRT) at the University of NSW, has not done it just once by turning waste tyres into metal, she's done it again with the rest of the car.

Professor Sahajwalla's newest invention, which was given its first public outing at a conference in the US this week, is to take waste glass and plastic from "dead" cars and turn them into an alloy suitable for hi-tech applications.

"We take the non-recyclables, the glass and the plastics, and use the silicon in the glass and carbon from the plastics and along with tiny fragments of steel in the waste materials we put through a reaction to create a new material, a ferrosilicon alloy," she said.

Professor Sahajwalla was the overall winner of last year's The Australian Innovation Challenge awards for her remarkable invention using car tyres to create steel.

Working with her industry partner OneSteel for more than a decade, the technology has prevented millions of tyres from becoming landfill, along with recycled plastic containers, by using them to partly

replace coke in generating power for the production of steel.

Professor Sahajwalla's genius is that she is able now to use an entire car to create either steel or alloy using existing furnaces and infrastructure.

The tyres-to-steel technology is in commercial production in Sydney and Melbourne and has been exported to Thailand.

Professor Sahajwalla admits both processes must have global appeal given the expense and environmental sensitivities of extracting raw materials and the dumping of millions of tonnes of rubbish in landfill.

"In Australia alone we dispose of more than 750,000 cars a year and that includes 22 million kilograms of glass that usually end up in landfill.

"It's a global challenge."

Her new technology has been tested over and over again in the laboratory and there is no doubt it is not a fluke.

Professor Sahajwalla says the alloy is going through a engineering assessment to understand its properties fully and to understand how structurally sound it is.

Along the way, she appears to have found a third invention, but is keeping mum about it for the time being.