

Pure platinum used in 3D printing

South Africa's first 3D printing project was revealed by Platforum - a partnership consisting of the Central University of Technology, North West University, Vaal University of Technology and Lonmin - at the Rapdasa (Rapid Product Development Association of South Africa) conference in Durban.

Also referred to as additive manufacturing, 3D printing is a layer-based process used to manufacture objects with complex designs. The process of producing functional parts using additive manufacturing required the complement of different skills, including the design for the 3D prototype, powder production, machine parameter settings and post-treatment processing.

Explaining the significance of the printing of the prototype, Wilma Swarts, head of marketing at Lonmin and director of Platforum said: "3D technology has gained in popularity in recent years, and the introduction of the additive manufacturing using precious metals will contribute and add to the range of applications where the properties of PGMs are used."

Pure platinum powder

Lonmin's contribution to the project involved the production of the platinum powder. Initial trials were conducted from August 2016 to produce pure platinum powder to suit the specifications for the additive manufacturing printing process. In October 2017, the platinum powder was tested, the machine parameters optimised and prototypes finally printed.

Additive manufacturing using precious metals creates new opportunities for value-added processing and mineral beneficiation using PGMs. "Today's reveal showcases the potential of 3D printing of platinum group metals (PGMs). Through additive manufacturing, intricate and light weight PGM products can be manufactured at speed, presenting new opportunities for PGMs, socio-economic development, Lonmin and the platinum mining sector," she said.

Looking ahead, the Platform will explore the potential of 3D printing using precious metals to produce PGM alloys and existing but also new and novel applications for the medical, energy and the automotive industries.

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