

New-generation multi-point/single-layer superabrasive tools

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In news- A newly developed technology can now produce new-generation multi-point/single-layer superabrasive tools for advanced grinding applications to meet high productivity and energy-efficient material removal requirements.

About new superabrasive tools-

- A research team led by Dr. Amitava Ghosh at IIT Madras has **used advanced chemical bonding technology with an application-specific novel formulation of filler material** and controlled spacing of grits on the tools by an indigenously developed semi-automatic grit-printing device.
- The **team recommends application-specific-advanced coatings to develop such new-generation superabrasive tools.**
- The novel formulation offers an excellent blend of strength, wear resistance, and wetting characteristics (ability to spread well in a liquid state with low contact angle on solid superabrasives during brazing).
- The grit-planting (planting/placing of grits in pre-defined co-ordinate position on grinding wheel's working surface) setup allows a manufacturer to print grit in customised pattern to suit the requirement of an application.
- The recommended coating enhances the durability of the bond, thus adding life to the developed tools.
- **In a nutshell, these superabrasive tools can be produced using active brazing technology** with remarkably striking attributes of high crystal exposure above bond level.

- The joint strength and wear-resistant characteristics of bond of these tools are superior to those of their commercial counterparts.
- **These tools can withstand more grinding force, offer significantly higher tool life,** and execute load-free grinding of advanced materials with an extremely high material removal rate.
- **This indigenous tool is supported by the Core Research Grant (CRG) of the Science and Engineering Research Board (SERB),** a statutory body of the Department of Science and Technology (DST).
- **The technology can produce new-generation tools with versatile geometries.**
- This technology which fits the requirements of Make-in-India National Mission is under lab validation and is near-ready to be taken up by a start-up or any industry for a full-scale launch.