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Laser Assisted Micro Machining Method and Device

Laser-assisted micromachining allows high-speed production of micro- and mesoscale parts from hard, conductive or non-conductive materials without causing subsurface damage.

Traditionally, methods used to make micro- and mesoscale parts from hard materials, such as ceramics, are slow and costly. These methods require micro EDM, ultrasonic machining, or short-pulse laser machining, which all include the potential for a recast layer or subsurface damage.

Researchers at Purdue University have developed a method for laser-assisted micromachining that prevents any subsurface damage. This process works on both conductive and non-conductive materials. This technology allows for cutting very hard materials at relatively high speeds with attainable feature sizes from 25 microns to 1000 microns (1mm).

Advantages:

-No subsurface damage in production of micro- and mesoscale parts

-Works on conductive and non-conductive hard materials

-Allows machining of materials at higher speeds relative to most existing methods

-Feature sizes from 25 microns to 1000 microns (1mm) are attainable

Potential Applications:

-Materials

-Manufacturing

TRL: 6

Intellectual Property:

Technology ID
64403

Category
Semiconductors/Fabrication & Process Technologies
Materials Science & Nanotechnology/Nanomaterials & Nanostructures
Chemicals & Advanced Materials/Materials Processing & Manufacturing Technologies

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