MINIATURE DIAMOND GYROSCOPE

Tech ID: 22506 / UC Case 2012-112-0

BRIEF DESCRIPTION

The primary application for gyroscopes is in navigation. While the currently available gyroscopes have important applications, these are limited due to large size, and sensitivity to temperature.

To meet these challenges, investigators at University of California at Berkeley have developed a miniature diamond gyroscope, based on nitrogen vacancy centers in diamonds. This miniature diamond gyroscope extend the capabilities of existing technology by enabling gyroscopes of very small sizes. The miniature diamond gyroscope provides new technique for sensing rotations based on the negatively-charged nitrogen-vacancy NV center in diamond. The key advantages of this technology is that it is all-solid-state, operates over a wide range of temperatures. The active part of the sensor is very small, on the scale of 1 cubic millimeter. The sensitivity under optimal conditions is comparable to or better than other large scale gyroscope technologies.

Publication- http://arxiv.org/abs/1205.0093,

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,689,679	06/27/2017	2012-112

SUGGESTED USES

- small unmanned aircraft
- personal electronic devices
- medical sensing devices

ADVANTAGES

- 1 cubic millimeter
- all solid-state
- operates over a wide range of temperatures
- above 1 radian geometric phase shift measurement

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OTHER INFORMATION

CATEGORIZED AS

- **Semiconductors**
  - Design and Fabrication
- **Sensors & Instrumentation**
  - Physical Measurement
  - Position sensors
- **Engineering**
  - Robotics and Automation

RELATED CASES

2012-112-0