

Method Of Microbubble Resonator Fabrication

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BRIEF DESCRIPTION

An innovative technique for creating high-sensitivity Whispering Gallery Mode (WGM) sensors through advanced microbubble resonator fabrication.

FULL DESCRIPTION

This technology introduces a novel method for fabricating microbubble cavities with enhanced Q-factors, crucial for Whispering Gallery Mode (WGM) sensors. By utilizing advanced thermal control techniques and uniform heating methods, uniform cavities with a symmetrical spherical structure and superior surface smoothness are achieved. This method significantly improves the sensitivity and reliability of optical sensors for detecting physical, chemical, and biological parameters.

SUGGESTED USES

- » Biosensors for detecting biomolecules, viruses, proteins, and DNA at ultra-low concentrations.
- » Environmental monitoring through detection of gases and nanoparticles.
- » Industrial process control by monitoring physical and chemical parameters.
- » Advanced research tools in fluid dynamics and optical resonator studies.
- » Next-generation medical diagnostics and chemical substance detection.

ADVANTAGES

- » Enables the detection of biomolecules at ultra-low concentrations
- » Improves the Q-factor through symmetrical and smooth microbubble surfaces.
- » Facilitates real-time detection of a wide range of analytes, including gases and viruses.
- » Uniform and reproducible cavity production, thanks to precise laser alignment and automated rotation.
- » Flexibility in microbubble sizes, ranging from a few micrometers to several millimeters.
- » Highly accessible and practical system design, utilizing off-the-shelf components to reduce production costs.

PATENT STATUS

Patent Pending

RELATED MATERIALS

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OTHER INFORMATION

CATEGORIZED AS

- » **Optics and Photonics**
 - » All Optics and Photonics
- » **Research Tools**
 - » Other
- » **Sensors & Instrumentation**
 - » Analytical
 - » Biosensors
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