



# Printing and Photolithography-free fabrication of sealed TGV

## Applications

- Accelerometer
- Glass-based devices

## Problem & Solution

Thin glass plates with through holes, named **Through Glass Vias (TGVs)**, have been recently available from major glass manufacturers and are intended for microdevice fabrication. However, with current technology, only glass slabs with unsealed TGVs are available. Sealing these TGVs for specific applications causes problems of too many processing steps, sacrificial material waste and limited processing options.

This invention overcomes the above problems by providing a technology free from transfer printing and photolithography to fabricate TGVs that are sealed with suspended portions of a nanocrystalline diamond (NCD) layer. Steps to fabricate this sealed TGV include wet etching, laser ablation and NCD layer growth. These steps produce a sealed TGV platform that can be incorporated into glass-based devices such as an accelerometer.

## Benefits

- Printing/Lithography Free
- Environmental Durability
- High temperature resistance

## Patent Pending

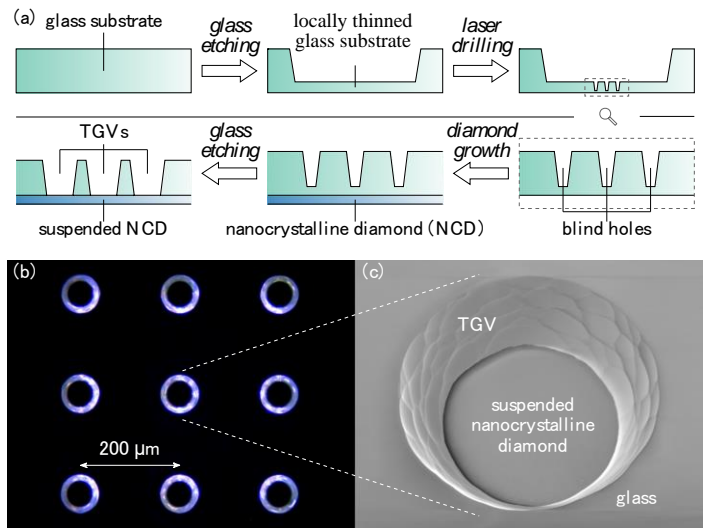
## Keywords

Through glass via, TGV, sealed, blind hole, nanocrystalline diamond, glass device, accelerometer

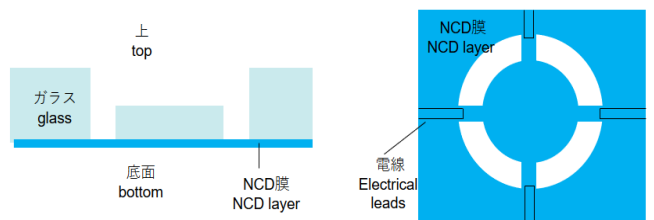
## For more information

Business Development/Technology Licensing Section

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(a) Schematic of fabricating a nanocrystalline diamond sealed TGV. (b) Dark field microscope image. (c) Scanning electron microscope image of the center TGV.



Cross-section (left) and bottom view (right) of an NCD-glass accelerometer.