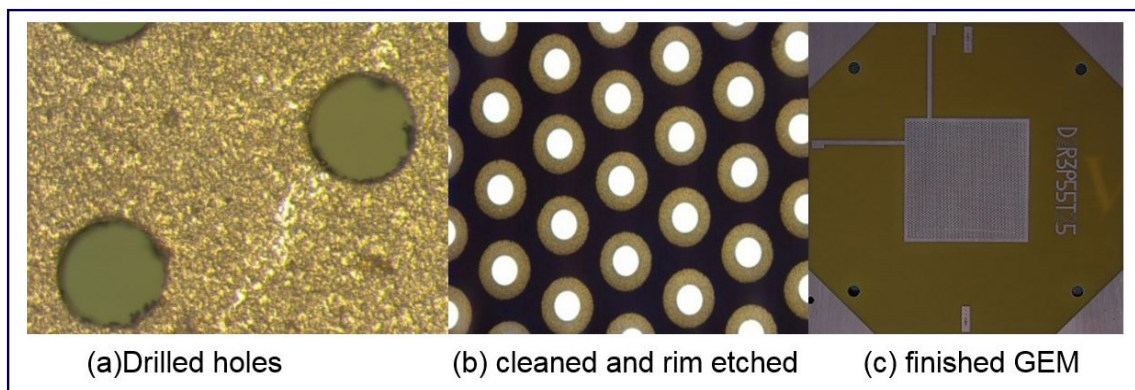


Fabrication technology for Gas electron Multipliers

U R Rao Satellite Centre (URSC) of Indian Space Research Organisation (ISRO) has developed the fabrication technology for Gas electron Multipliers for X-Ray detection in space astronomy applications.

The Gas Electron Multiplier (GEM) is a proven amplification technique for position detection of ionising radiation such as charged particles, photons, X-rays and neutrons, in gas detectors. The GEM is a detector containing a densely pierced glass epoxy / polyimide laminate coated with electrodes on both sides which is able to achieve high amplification gains and performance at low cost, even under harsh conditions. On application of a difference of potential between the two electrodes, electrons released by radiation in the gas on one side of the structure drift into the holes, multiply and transfer to a collection region.



Salient Features & Major Specifications

- ✦ Thin glass epoxy laminate was used to make the GEM.
- ✦ Holes were made with mechanical drilling with optimized parameters.
- ✦ Cleaning process was formulated to remove sharp points in the holes due to protruding glass fibres.
- ✦ Uniform etching of the copper around the holes were achieved through specific etching process with agitation mechanism.

- ✦ Cost effective methodology utilizing standard PCB fabrication equipment and chemistry.
- ✦ 0.075mm holes.
- ✦ 0.150mm pitch.
- ✦ GEM substrate thickness : 0.10mm.
- ✦ Copper thickness : 0.017mm.

Technology Transfer

URSC/ISRO offers to transfer this fabrication technology for Gas electron Multipliers to industries in India with adequate experience and facilities. Industries interested in obtaining knowhow may write giving details of their present activities, infrastructure and facilities.

Technology Transfer & Industry Coordination Division (TTID),
Programme Planning and Evaluation Group (PPEG),

📍 U R Rao Satellite Centre (URSC), ISRO, HAL Airport Road,
Vimanapura Post, Bangalore – 560 017.

✉ Email-id: tt-icd@ursc.gov.in

☎ Fax No: 080-25205261

🌐 <https://www.ursc.gov.in/industry/index.jsp>