QUARTZ CRYSTAL MICROBALANCE (QCM)
Technology

- An in-situ QCM (quartz crystal microbalance) that can be used for molecular recognition in advanced scientific research
- The system has a wide and continuous range of frequencies, up to 30 MHz
- System can be used to make continuous real time measurements up to microsecond levels
- System has an “embedded, system-on-chip software”, with hard-to-copy software system
- System could be made portable
Applications

- Widespread use in research laboratories
- For probing surface level changes, molecular recognition etc.
- Used by researchers in the areas of:
  - Nano-science
  - Biotechnology
  - Polymers
  - Electrochemistry etc.
Market Potential

- QCMs will be widely used in any materials/bio/pharma/nano-tech R&D facilities
- Production of instrumentation related products in India was estimated at Rs. 50 billion per annum**
  - Analytical instruments market alone has been growing at over 10% per annum
- More and more R&D centers are being set-up in India, with MNC’s joining the fray—great potential for growth in instrumentation sector
- There are over 2400 R&D facilities in India* - with a large portion of them requiring new instruments, and hence offering new markets

*DSIR Directory of SIROs, In-house R&D units, registered R&D institutions

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Value

- Compact system – could be made portable
- A range of frequencies is possible- thus enabling a variety of measurements with a single instrument
- Avoids complicated design requirements by using a system-on-a-chip (SOC) system
- Continuous monitoring of experiments possible- thus increasing the utility and flexibility
- Low cost alternative to imported instruments
Technology Status, IP Status

- Working prototype has been successfully demonstrated at the lab scale
- On the look out for partners to license/commercialize technology
- Ready to be licensed
## Technology Summary

<table>
<thead>
<tr>
<th>Technology title</th>
<th>Quartz Crystal Microbalance (QCM)</th>
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<tbody>
<tr>
<td>Industry /sector</td>
<td>Instrumentation/Research</td>
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<td>Year of development</td>
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<td>Related patents (with links)</td>
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<tr>
<td>Technology readiness level</td>
<td>Working prototype demonstrated</td>
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<td>Licensing status</td>
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<td>Encumbrances</td>
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<td>Availability</td>
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