

Quartz Crystal Microbalance (QCM)

EXECUTIVE SUMMARY

An in situ quartz crystal microbalance (QCM), based on a compact embedded system, that can be used to study molecular recognition and for other scientific/ research purposes

TECHNOLOGY DESCRIPTION

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

MARKET POTENTIAL

- QCMs will be widely used in any materials/bio/pharma/nano-tech R&D facilities- there are over 2400 R&D facilities in India* - with a large portion of them requiring new instruments, and hence offering new markets
- 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

*DSIR Directory of SIROs, In-house R&D units, registered R&D institutions, ** Report on "The Engineering Sector in India", July 2008, pub. By Indo-Italian Chamber of Commerce and Industry

VALUE/ADVANTAGES

- 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

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.

TECHNOLOGY STATUS

- Working prototype has been successfully demonstrated at the lab scale
- On the lookout for potential partners for licensing