World Academy of Science, Engineering and Technology
International Journal of Electrical and Information Engineering
Vol:10, No:05, 2016

Quartz Crystal Microbalance Holder Design for On-Line Sensing in Liquid Applications

Authors : M. A. Amer, J. A. Chávez, M. J. García-Hernández, J. Salazar, A. Turó

Abstract : In this paper, the design of a QCM sensor for liquid media measurements in vertical position is described. A rugged and low-cost proof holder has been designed, the cost of which is significantly lower than those of traditional commercial holders. The crystal is not replaceable but it can be easily cleaned. Its small volume permits to be used by dipping it in the liquid with the desired location and orientation. The developed design has been experimentally validated by measuring changes in the resonance frequency and resistance of the QCM sensor immersed vertically in different calibrated aqueous glycerol solutions. The obtained results show a great agreement with the Kanazawa theoretical expression. Consequently, the designed QCM sensor would be appropriate for sensing applications in liquids, and might take part of a future on-line multichannel low-cost QCM-based measurement system.

Keywords : holder design, liquid-media measurements, multi-channel measurements, QCM
Conference Title : ICUA 2016 : International Conference on Ultrasonics and Applications
Conference Location : Amsterdam, Netherlands
Conference Dates : May 12-13, 2016

Open Science Index, Electrical and Information Engineering Vol:10, No:05, 2016 publications.waset.org/abstracts/41987.pdf