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涂敷脲醛树脂的石英晶体微天平湿度传感器

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摘　要：

在碱性条件下预先合成脲醛树脂单体，然后在酸性条件下于石英晶体的电极上原位合成脲醛树脂高分子薄膜，制备了石英晶体微天平湿度传感器。同时考察敏感膜厚度对检测灵敏度的影响以及传感器的响应特性、重复性和稳定性。试验结果表明：涂敷脲醛树脂薄膜的传感器频率随测试的相对湿度变化明显，传感器具有良好的重复性和稳定性。制作的湿度传感器在实际的生产、生活中具有良好的应用前景。

关键词：石英晶体微天平；湿度传感器；脲醛树脂

Quartz crystal microbalance coated with urea formaldehyde resin films used as humidity sensor

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Abstract:

This paper reports a novel quartz crystal microbalance (QCM) humidity sensor, its sensitive layer prepared by in situ method, and then the urea-formaldehyde resin (UFR) polymer was prepared by in situ polymerization on the quartz crystal electrode in acidic conditions. The influence of film thickness on the detection sensitivity, characteristics of response, repeatability, stability of the sensor were also investigated during the experiment. Results indicated that the frequency of the sensor coated with UFR film changed significantly with relative humidity, and the newly developed sensor exhibited good reproducibility and stability. The proposed sensor can be applied to detect humidity in practical production.

Keywords: quartz crystal microbalance; humidity sensor; urea formaldehyde resin

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