

研究报告

热导检测技术在线分析氢同位素气体

叶小球; 秦城; 桑革; 彭丽霞

中国工程物理研究院, 四川 绵阳 621907

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摘要 以高纯氘作载气, 对热导检测技术(TCD)在线分析氢同位素气体进行了实验研究, 考察了进样压力、氘丰度以及样品中HD含量对测量结果的影响。实验结果表明, TCD对氘的响应与氘的压力呈良好的线性关系; 对已知氘丰度为1%~90%的氘氘混合物样品进行了测定, 测量结果的误差与氘氘混合气体中的HD丰度成正比, 绝对误差范围在0.000~0.025。

关键词 [热导检测器](#); [氢同位素](#); [分析](#)

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On-Line Analysis of Hydrogen Isotopes With Thermal Conductivity Detector

YE Xi ao-qiu; QIN Cheng; SANG Ge; PENG Li -xia

China Academy of Engineering and Physics, P.O.Box 919(71), Mi anyang 621907, Chi na

Abstract On-line analysis of hydrogen isotopes with thermal conductivity detector(TCD) using H₂ carrier gas was experimentally studied. Moreover, the influence of the sample gas pressure, deuterium concentration and HD content on measured results was investigated and discussed. The experimental results show that a good linear relation between TCD response to the partial pressure of deuterium is obtained. Various H₂-D₂ mixtures with 1%-90% deuterium concentration were used to verify this method. The error between measured value and theoretical value is in direct proportion to the HD content. The absolute error range is 0.000-0.025.

Key words

DOI

通讯作者 叶小球

扩展功能

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