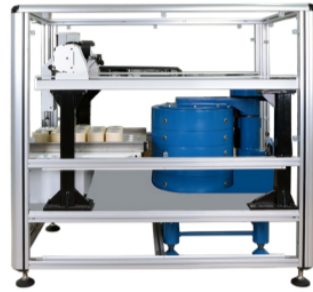


HD-2001

全自动低本底多道 γ 能谱仪

Full-automatic Low Background Multi-channel γ -ray Spectrometer



应用领域

- 建材、土壤、生物、地质样品等 γ 能谱测量分析
- 空气、土壤中氡浓度的测量分析
- 建筑材料的快速无损检测
- 铀矿地质样品镭(铀)、钍、钾含量分析

符合的标准/规程

- GB/T 11743-2013 《土壤中放射性核素的 γ 能谱分析方法》
- GB 6566-2010 《建筑材料放射性核素限量》
- GB 50325-2020 《民用建筑工程室内环境污染控制标准》
- GB/T 18883-2022 《室内空气质量标准》
- HJ 1212-2021 《环境空气中氡的测量方法》

Application Fields

- Gamma spectrometry analysis of building materials, soil, biological and geological samples
- Measurement and analysis of radon concentration in air and soil
- Rapid non-destructive detection of building materials
- Content analysis of radium (uranium), thorium and potassium in uranium geological samples.

The instrument meets the measuring principle and requirements of GB/T 11743-2013, GB 6566-2010, GB 50325-2020, GB/T 18883-2022 and HJ 1212-2021.



型式批准证书号: 2011A206-11



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HD-2001

全自动低本底多道 γ 能谱仪

Full-automatic Low Background Multi-channel γ -ray Spectrometer



仪器特点

- 全自动换样、测量、分析, 无需人工值守, 自动保存分析报告
- 采用实时存储机制, 断点续采, 掉电自动保存数据
- 测量过程中支持随时暂停/继续测量
- 测量过程中可根据样品计数率高低随时修改测量时间
- 具有粉末样品测量、无损样品测量、空气氡及土壤氡测量四大功能
- 采用活性炭盒自然吸附法测量室内空气中氡浓度
- 采用活性炭盒主动吸附取样分析法测量土壤中氡浓度

技术指标

1. 探测器: $\phi 75 \times 75$ mm的NaI(Tl)晶体
2. 总道数: 1024、2048道, 实际应用道数: 2048道
3. 能量分辨率: $< 7.5\%$ (^{137}Cs)
4. 本底: ≤ 5.0 cps (50 keV ~ 3 MeV)
5. 单次循环测量样品数量: 24(可扩展外接样品架)
6. 电机重复定位精度: $\leq \pm 0.1$ mm
7. 微分非线性: $< 0.05\%$
8. 积分非线性: $< 0.10\%$
9. 稳定性: 相对误差 $\leq 1.0\%$ (24h)
10. 脉冲分辨率: 500ns
11. 检出限:
 - ^{226}Ra : 8.0 Bq/kg
 - ^{232}Th : 6.0 Bq/kg
 - ^{40}K : 20.0 Bq/kg
 - ^{222}Rn (空气): 6.0 Bq/m³
 - ^{222}Rn (土壤): 300.0 Bq/m³
12. 测量扩展不确定度: $< 10\%$ (核素放射性活度 > 37 Bq/kg)
13. 使用环境
 - 环境温度: $(5 \sim 40)^\circ\text{C}$
 - 相对湿度: $< 90\%$ ($+40^\circ\text{C}$)
14. 电源: 交流220V ($\pm 10\%$), 50Hz
15. 外形尺寸和重量
 - 铅室: $(\phi 580 \times 850)$ mm, 壁厚100mm, 约900kg
 - 换样设备(L \times W \times H): 1300 \times 850 \times 1300mm, 约200kg

Instrument Characteristics

- Fully-automatic sample change, measurement and analysis, no manual duty, automatic saving of analysis report, 24 samples in a single cycle.
- Data is automatically saved after power failure due to real-time storage mechanism.
- Pause/resume measure at any time during measurement.
- The time can be modified at any time during the measurement.
- 4 sample measurements: powder sample, nondestructive sample, air radon and soil radon.
- Activated carbon box natural adsorption method for air radon measurement.
- Activated carbon box active adsorption sampling analysis method for soil radon measurement.

Specifications

1. Detector: $\phi 75 \text{mm} \times 75 \text{mm}$ NaI(Tl) Crystal
2. Total Channels: 512, 1024, 2048 or 4096 alternative, the practical application channel is 2048
3. Energy Resolution: $< 7.5\%$ (^{137}Cs)
4. Background: ≤ 5.0 cps (50 keV ~ 3 MeV)
5. Sample number in single cycle: 24 (expandable sample rack)
6. Repeated positioning accuracy of motor: $\leq \pm 0.1$ mm
7. Differential Nonlinearity: $< 0.05\%$
8. Integral Nonlinearity: $< 0.10\%$
9. Stability: RE $\leq 1.0\%$ (24h)
10. Pulses Resolution: 500ns
11. Detection Limit:
 - ^{226}Ra : 8.0 Bq/kg
 - ^{232}Th : 6.0 Bq/kg
 - ^{40}K : 20.0 Bq/kg
 - ^{222}Rn (air): 6.0 Bq/m³
 - ^{222}Rn (soil): 300.0 Bq/m³
12. Extended uncertainty: $< 10\%$ (Radionuclide Activity > 37 Bq/kg)
13. Operating Environment
 - Temperature: $(5 \sim 40)^\circ\text{C}$
 - Relative Humidity: $< 90\%$ ($+40^\circ\text{C}$)
14. Power: 220V ($\pm 10\%$) AC, 50Hz
15. Dimensions and Weight:
 - Lead Chamber: $(\phi 580 \times 850)$ mm, thickness 100mm, about 900kg
 - Sampler device(L \times W \times H): 1300 \times 850 \times 1300mm, about 200kg

所获荣誉

2007年荣获国防科工委及中核集团公司科技进步二等奖

仪器认证

中国计量科学研究院检定并出具检定证书

Received Honorary

The instrument won the second prize for scientific and technological progress by COSTIND and China National Nuclear Corporation in 2007.

Instrument Certification

Verified by National Institute of Metrology P.R.China (NIM) and issued the verification certificate.



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