

Press Release

for Immediate Release

March 3, 2017

Quantachrome Instruments Announces the Release of a Unique Cryogenic Temperature Controller: The **CryoSync™**

SUMMARY

The **CryoSync™** is a compact and cost-effective cryostatic accessory designed to provide precise temperature control (± 0.005 K) at temperatures in the range 82-100 K. The **CryoSync™** is ideally suited to enable ASiQ and other physisorption analyzers to generate fast and IUPAC-recommended micropore analyses using argon (Ar) gas at 87 K and liquid nitrogen as the cryogen.

CONTACT

Quantachrome Instruments
Eric Gelman
Boynton Beach, FL 33426
+1 561.731.4999 | 561.732.9888
e-mail: qc.sales@quantachrome.com

INDUSTRIES

- Zeolites
- Catalysts
- Metal-Organic Frameworks (MOFs)
- Activated Carbons
- Graphene
- Battery Materials
- Supercapacitors
- Nanomaterials
- Microporous Adsorbents

KEY WORDS

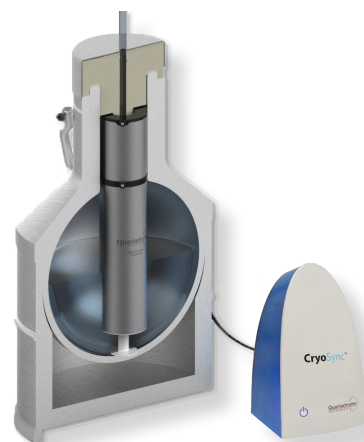
- Gas sorption
- Micropore analysis
- IUPAC recommendation
- Liquid argon temperature
- Cryostat compressor
- Cryocooler
- Cryogenic refrigerator
- Temperature control
- Heat of Adsorption

INTRODUCTION

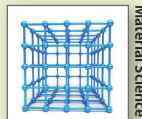
The **CryoSync™** is a highly precise and cost-effective cryogenic temperature controller operated as an external accessory with the Autosorb iQ (ASiQ), or adapted for use with other suitable volumetric adsorption devices.

The **CryoSync™** is designed to provide precise temperature control (as low as ± 0.005 K) at temperatures in the range 82-100 K. The **CryoSync™** is ideally suited to enable ASiQ and other physisorption analyzers to generate fast and IUPAC-recommended [1] pore size analyses using argon gas at liquid argon temperature (87.3 K), while employing the more readily available liquid nitrogen (at 77.4 K) as the cryogen.

The **CryoSync™** operates by controlling a highly stable thermostatic block, wherein the sample to be analyzed is placed. The temperature of the thermostatic block is measured by a temperature probe coupled to a programmable heating control unit. Precise control of the power delivered by the controller allows the system to maintain temperature stability in the thermostatic block within a range as low as ± 0.005 K for a minimum of 50 hours when controlling at liquid argon temperature. Although the **CryoSync™** can work without a PC, it is supplied with software that allows real-time temperature monitoring and recording. The **CryoSync™** has been developed and patented by Quantachrome Instruments (patent pending).



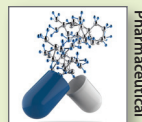
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Material Science



Building Material



Pharmaceutical



Food Processing

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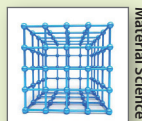
KEY FEATURES

- Promotes the latest IUPAC recommendations [1] to avoid issues with N_2 quadrupole interactions and provide faster and more reliable argon gas analyses at 87.3 K.
- Synchronizes the need for liquid argon-free analyses with IUPAC-recommended high resolution micropore analyses using argon gas at liquid argon temperature (87.3 K).
- Performs analyses at liquid argon temperature (87.3 K) using less expensive liquid N_2 (77.4 K).
- Provides a simple alternative to much costlier cryostatic compressor devices.
- Eliminates the need to measure or account for changes in saturation pressure (P_0).
- Holds the adsorption temperature stable with remarkable precision (as good as ± 0.005 K).
- Extends analysis duration to 50+ hours as needed for detailed micropore analyses.
- Operates in the temperature range 82-100 K.
- Saves bench space via compact design and multiple unit control from a central location.
- Easily adapts to any commercial gas sorption analyzer able to accept an external temperature control option.

[1] Thommes et al., Pure Appl. Chem. 87 (2015) 1051.



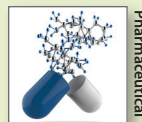
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