

High Temperature Set-up

As a long-time pioneer of advanced iGC instrumentations, Surface Measurement Systems is excited to offer the world's only instrument capable of carrying our advanced iGC analysis at extremely high temperatures. With an innovative Hi-Temp oven built into this new configuration, researchers can now conduct Contact Angle and Surface Energy analysis of a wide range of materials at up to 500 °C, testing how they will perform under extreme industrial conditions.



New high temperature oven: 30 °C - 500 °C

Conduct surface energy analysis under industrial conditions

Fully-automated iGC system

Patented headspace injection system with humidity generator

Purpose-built control & analysis software with CFR capabilities

Dispersive Surface Energy of Zeolite 13x

- yd SE of Zeolite 13x at 300° & 350 °C is homogeneous, the surface energetically uniform
- However, when the temperature rises to 400 °C, some degree of heterogeneity begin to appear

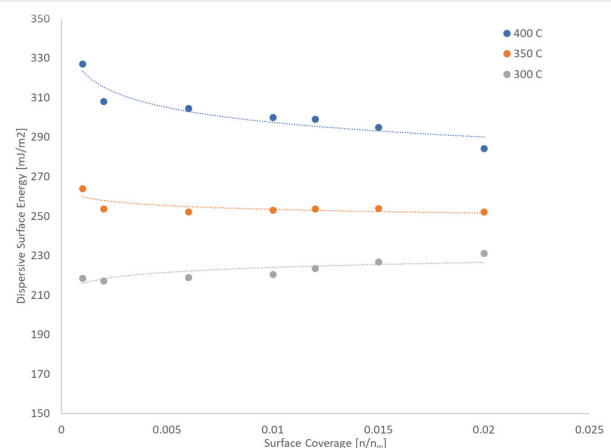


Fig 1. Dispersive Surface Energy of Zeolite 13x

Diffusion Coefficient

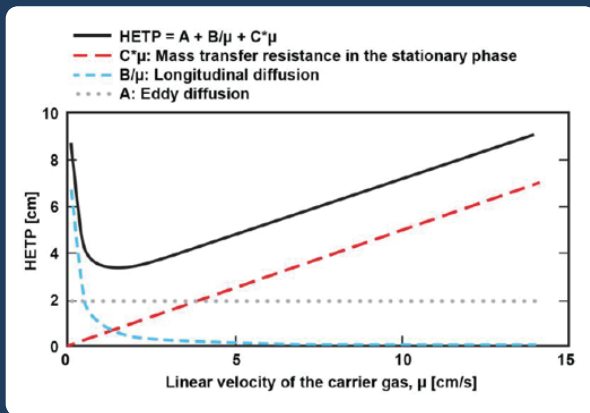


Fig 2. van Deemter plot demonstrating the three individual components of the van Deemter equation

Diffusion and mass transfer play a significant role in the design and optimization of catalytic processes, processing operations of materials and in adsorptive separation. The van Deemter model is a continuation of the plate theory and involves the dynamic response of HETP as a function of the average linear velocity of the carrier gas (see Figure 1), thereby allowing one to distinguish the three types of diffusion types: eddy diffusion, longitudinal diffusion, and mass transfer resistance.

In comparing the changes in diffusion coefficients as a function of temperature, the values are higher at 300 °C than 250 °C. This holds true for both vapors on both samples. These results are not surprising as higher temperatures often lead to faster diffusion rates. When comparing the cyclohexane and toluene results on the same sample, the cyclohexane diffusion coefficients are higher for both samples and temperatures.

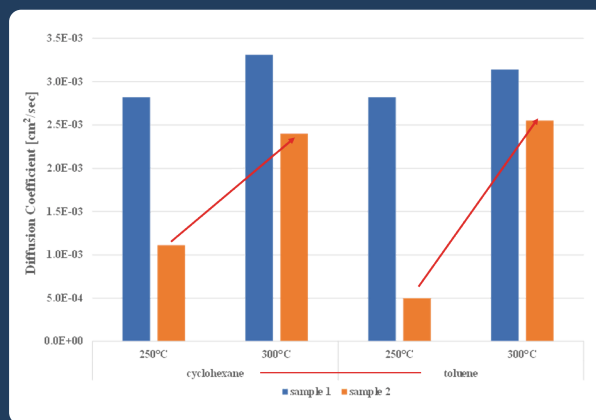


Fig 3. Diffusion of Microporous catalysts

Carrier Gas:

- Flow rate range 0.0 – 100ml/min
- Accuracy: ±0.1% FS at 25°C
- Response time: 4 milliseconds
- Carrier gas option: N₂, CO₂, Ar, He

Column Oven:

- Operating range: 30°C - 500°C
- Temp control accuracy range: ±0.5°C - 5°C

Injection System:

- Automatic Headspace Injection System with humidity generator
- Patented - US Patent 6490910B1
- RH accuracy ±1.5% RH

Software platform:

- Control and Analysis software
- Rapid data processing
- One-click report generation
- CFR 21 Part 11 software option

Reservoirs:

- 12 interchangeable reservoirs
- Reservoirs capacity: 50ml
- Over 60+ calibrated solvents

To inquire about the **iGC-SEA Hi-Temp**, email us at:

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www.surfacemeasurementsystems.com Europe | North America | India | China