

Adsorption and desorption of CO₂ on a catalyst

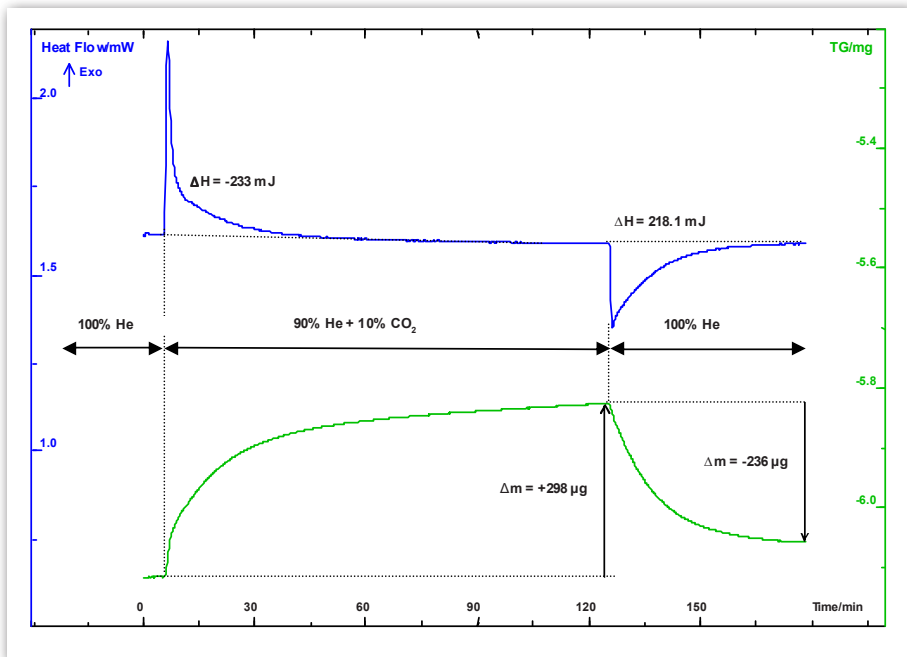
INTRODUCTION

CO₂ emissions have become nowadays a major concern. One way to limit CO₂ concentration in atmosphere is to adsorb it on specific material. CALVET PRO TG-DSC with its sensitivity which is not depending on the nature of the gas is a particularly powerful tool as it makes possible to study adsorption and desorption of a gas on a catalyst.

EXPERIMENT

- Sample : catalyst
- Mass : 40 mg
- Temperature : 40°C
- Atmosphere : pure helium during 5 min then 10% CO₂ in helium during 2 hours, then pure helium again during one hour.

Note : before experiment, the catalyst was previously heated up to 220°C during 2 hours under pure helium.



RESULTS AND CONCLUSION

When the mixture 10% CO₂ + Helium is introduced, an adsorption is observed : it corresponds to a mass increase of 298 μg and an exotherm of 233 mJ. When the gas is pure helium again, a desorption is observed: it corresponds to a mass loss of 236 μg and an endotherm of 218.1 mJ.

INSTRUMENT

CALVET PRO TG-DSC

-120 to 830°C



HIGHEST ACCURACY WITH ITS HANG-DOWN SYMMETRICAL BEAM BALANCE

eliminate drift & buoyancy effect, improve gas/sample interaction.

HIGHEST HEAT MEASUREMENT ACCURACY

3D sensor based on thermocouples with Joule effect calibration.

EXTERNAL COUPLING CAPABILITY

Designed to increase your research options, including manometry, BET, gas analyzers, humidity controllers and gas panels.

CONVENIENT INTERCHANGEABLE CRUCIBLES AND CELLS