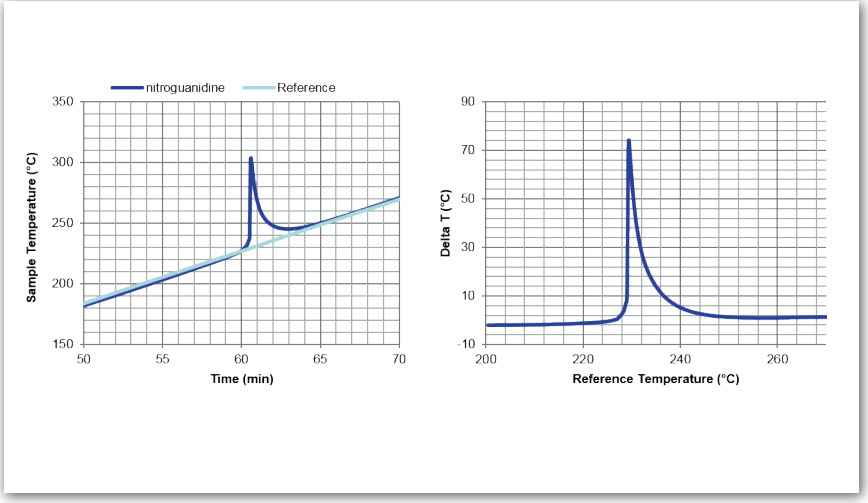
Rapid screening calorimetry tests of the decomposition of Nitroguanidine

INTRODUCTION

Nitroguanidine is an organic compound that decomposes above 200 °C. Its detonation velocity is quite high and it is thus used as a propellant in civil (air bags) or military applications.

EXPERIMENT

A 0.168 g sample of nitroguanidine was heated in a 8 mL titanium cell between 35 and 300 °C at 4 °C/min.
An empty titanium cell (reference) was heated simultaneously by the RSC-400 AS and its temperature was measured.



RESULTS AND CONCLUSION

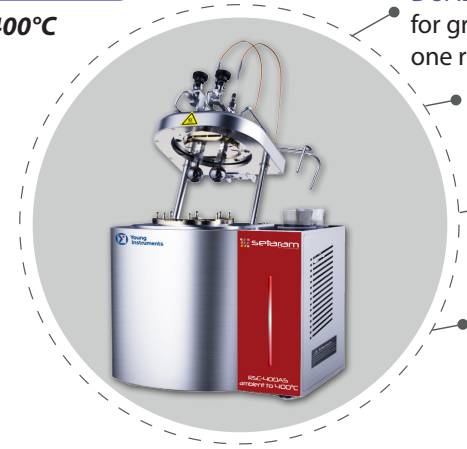
The analysis of experimental data allows for the determination of the onset temperature of decomposition, and for the calculation of the heat of decomposition. The thermal stability data of such reactive materials can be quickly measured by RSC-400 AS.

	T_{onset} (°C)	Calculated Heat (J)	Calculated Heat (kJ/g)
Nitroguanidine	215.0	324.7	1.91

INSTRUMENT

RSC-400 AS

Ambient to 400°C



DUAL SAMPLE TESTING
for greater throughput and for greater accuracy when one sample and one reference (inert solvent) are tested at the same time

RADIATIVE HEATING
and accurate temperature control (0.01°C) for more accurate decomposition temperature measurements

WITH 8 mL SAMPLE HOLDERS
representative samples (in terms of volume and mass) can be tested

ACCESSIBLY PRICED
instrument and replacement parts