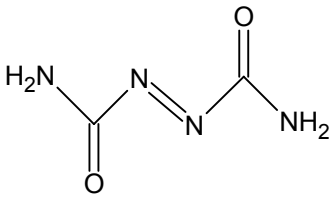
産業技術総合研究所　高エネルギー物質研究グループ
発熱分解エネルギー測定の標準化　　熱分析結果

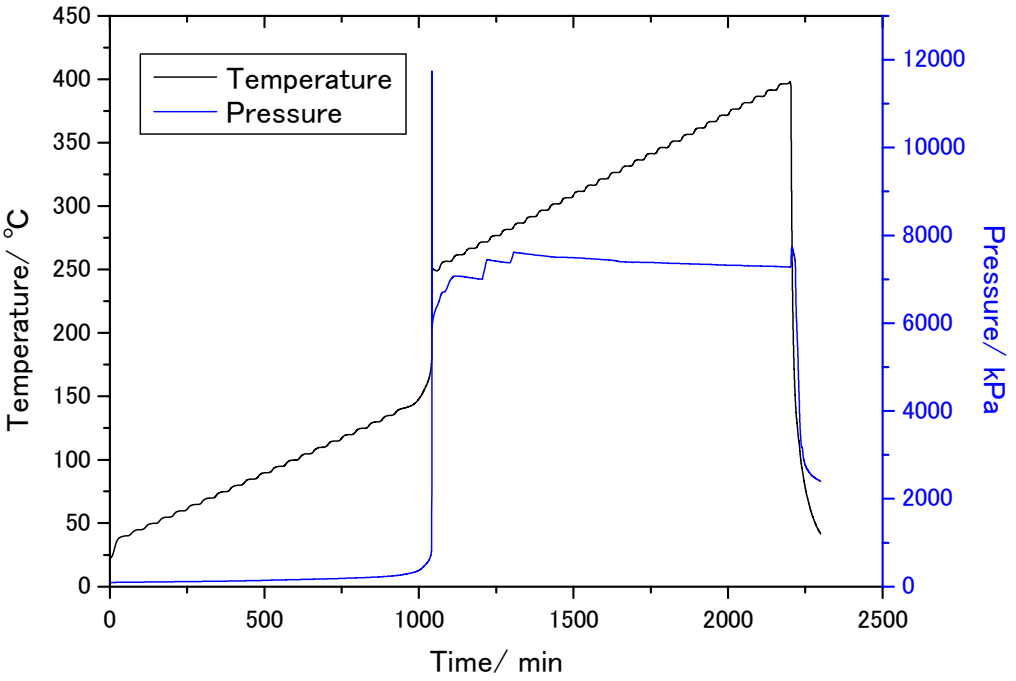
Azodicarbonamide　　$H_2NCON=NCONH_2$　　ADCA



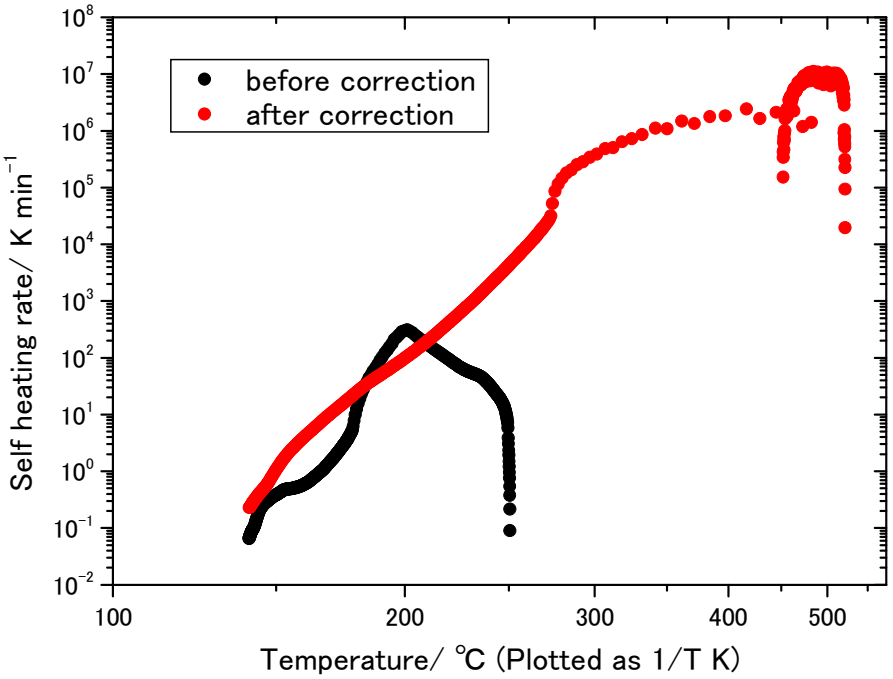
ARC divice: New ARC (TIAX, LLC)

Date: 2009/2/18

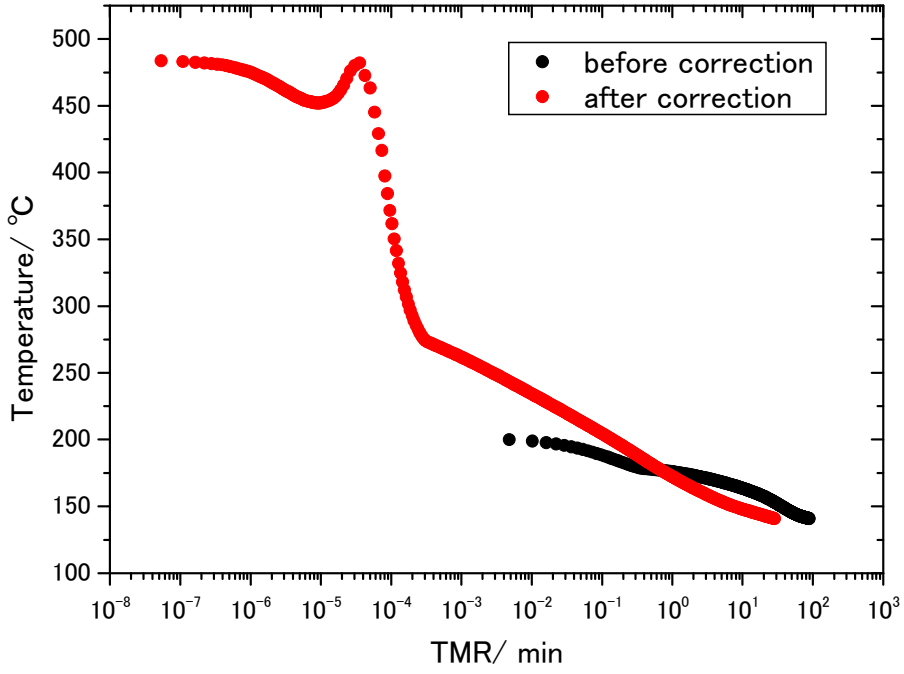
Operator: Y. S.



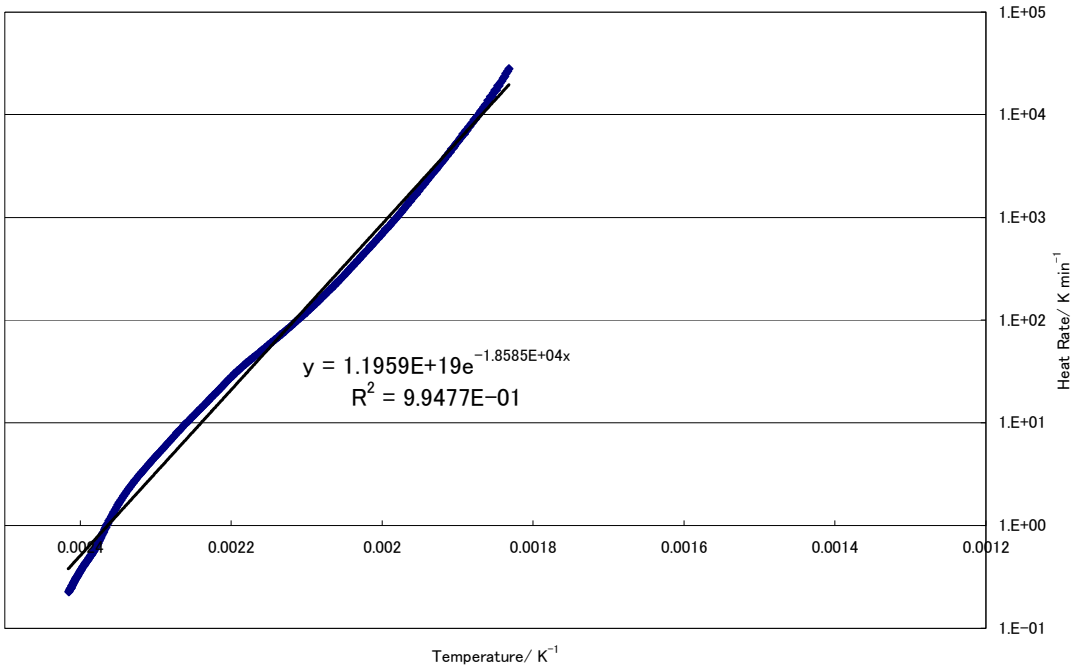
Time vs. Temperature and Pressure



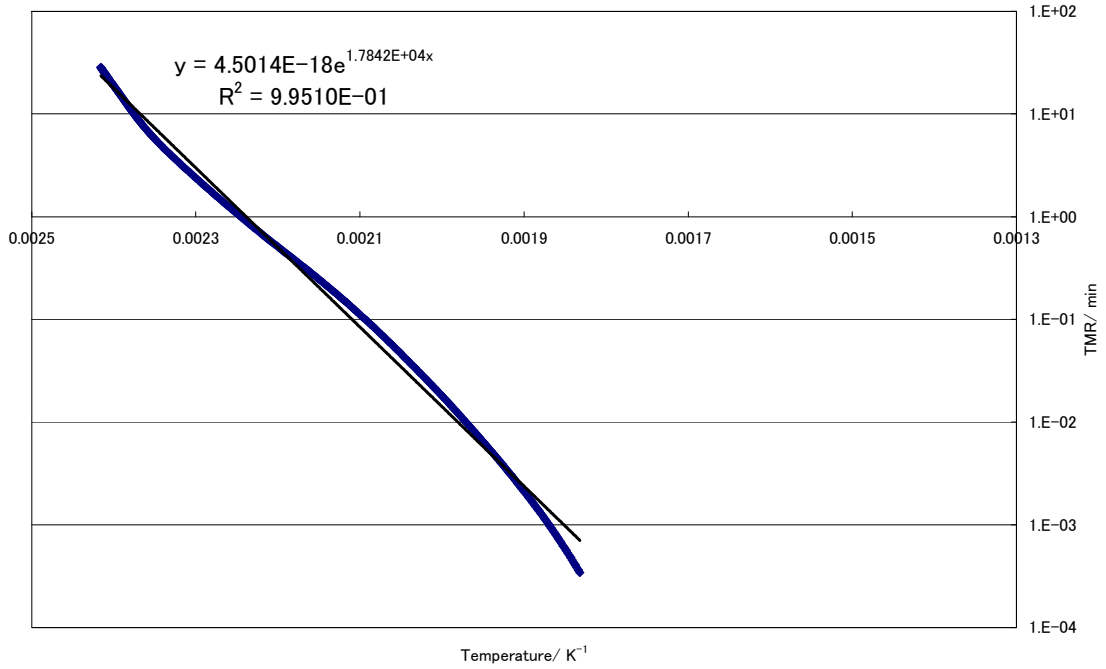
Temperature vs. Self heating rate



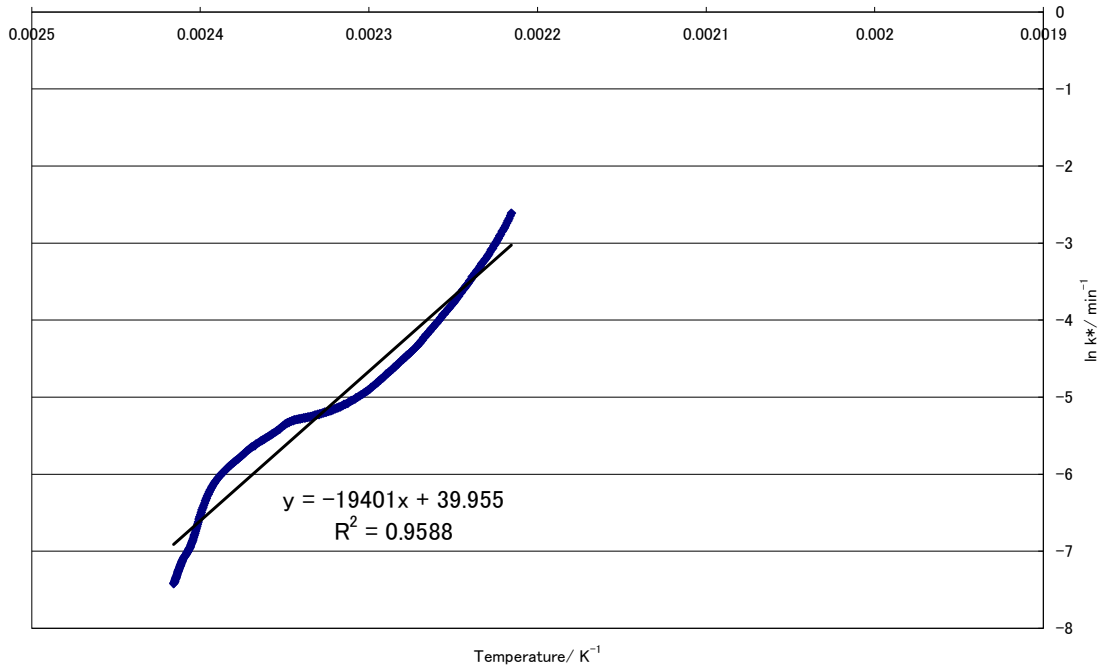
TMR vs. Temperature



Temperature vs. Self heating rate (approximate calculation)



Temperature vs. TMR (approximate calculation)



Arrhenius equation (approximate calculation)

	Date	2009/2/18
Measuring conditions	ARC device	NewARC (TIAX, LLC)
	Operating Institute	AIST
	Operator	Y. S.
	Material of Bomb	Hastelloy C
	Weight of Bomb (g)	20.2586
	Volume of Bomb (mL)	about 9
	Weight of sample (g)	1.6557
	Weight of residue (g)	0.4713
	Specific heat of Bomb (J K^{-1} g^{-1})	0.419
	Specific heat of sample (J K^{-1} g^{-1})	2.093
	ϕ facotr	3.449
	Start temperature (℃)	40
	End temperature (℃)	400
	Temperature increment (K)	5
	Waiting time (min)	15
	Searching time (min)	15
	Exothermic threshold (K min^{-1})	0.02

	Logging intervals (℃)	0.15
	Pressure limit (kPa)	20000
	Atmosphere	Air, atmospheric pressure
Results	T_o, Exothermic temperature (℃)	140.79
	Self heating rate at T_o (K min^{-1})	0.065
	Pressure at T_o (kPa)	277.98
	Temperature at maximum self heating rate (℃)	201.04
	Maximum self heating rate (K min^{-1})	310.41
	Pressure at maximum self heating rate (kPa)	11182
	Pressure rising rate at maximum self heating rate (kPa min^{-1})	8846.2
	Maximum pressure (kPa)	11736
	Maximum pressure rising rate (kPa min^{-1})	70922
	Temperature at maximum pressure rising rate (℃)	195.58
	Time to maximum rate (min)	88.52
	Maximum temperature (℃)	250.69
	Adiabatic temperature rise (℃)	109.9
	Activation energy (kJ mol^{-1})	161.3
	Heat of decomposition (J g^{-1})	793.3
Corrected results	T_{ARC}, Exothermic temperature (℃)	115.33
	Time of maximum rate at T_{ARC} (min)	397.65
	Self heating rate at T_{ARC} (K min^{-1})	0.02
	Maximum self heating rate (K min^{-1})	1.11×10^7
	Maximum temperature (℃)	515.81
	Adiabatic temperature rise (℃)	400.48
	Heat of decomposition (J g^{-1})	838.2