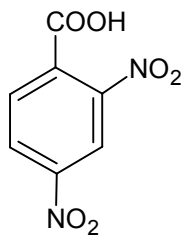


2,4-dinitrobenzoic acid

$(\text{O}_2\text{N})_2\text{C}_6\text{H}_3\text{COOH}$

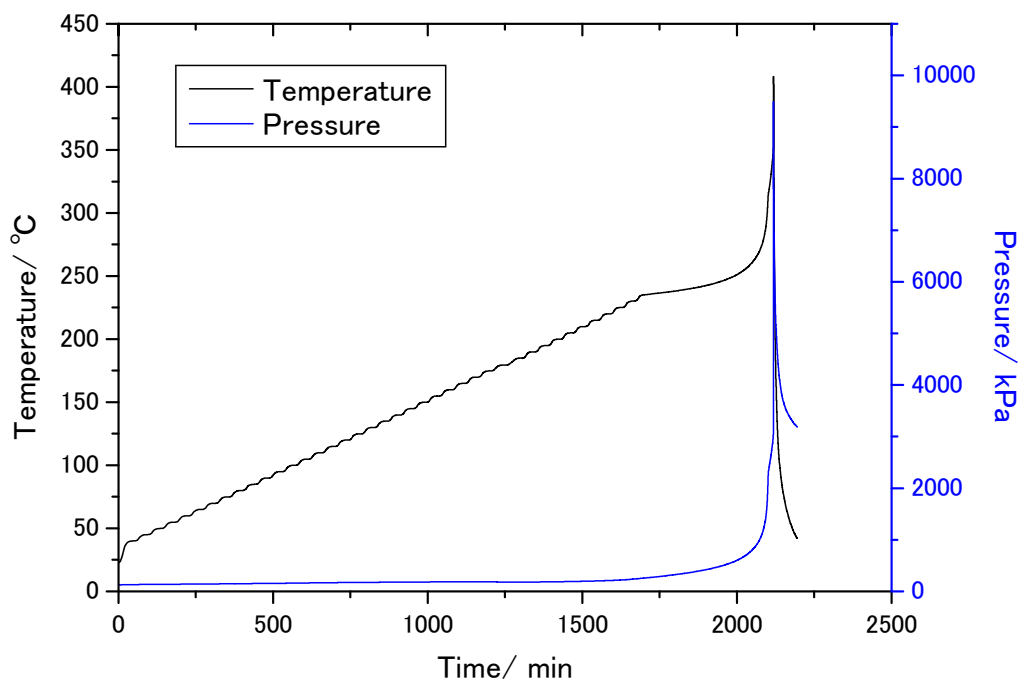
24DNBA



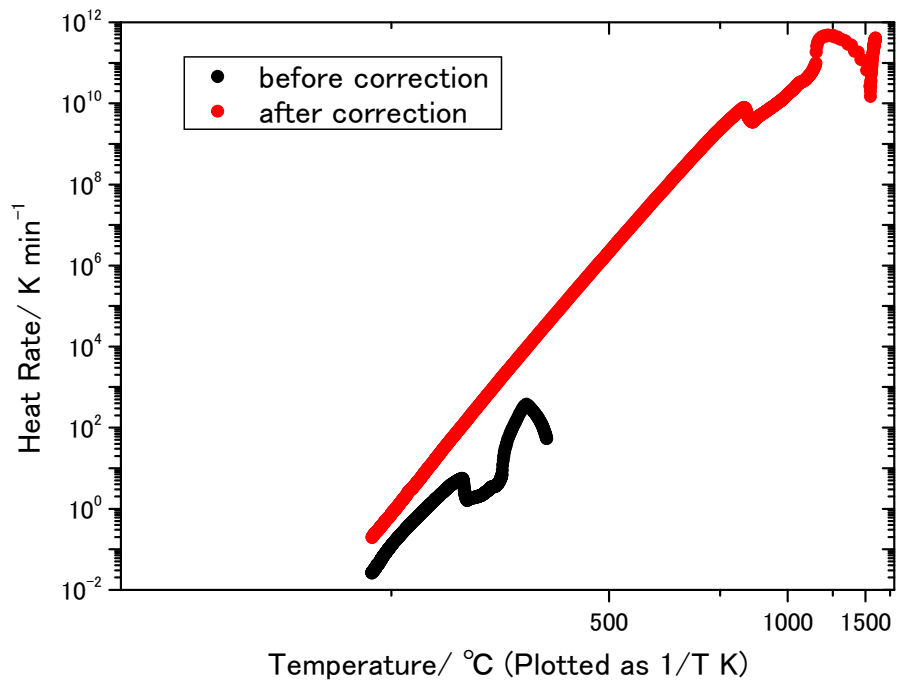
ARC device: New ARC (TIAX, LLC)

Date: 2009/2/16

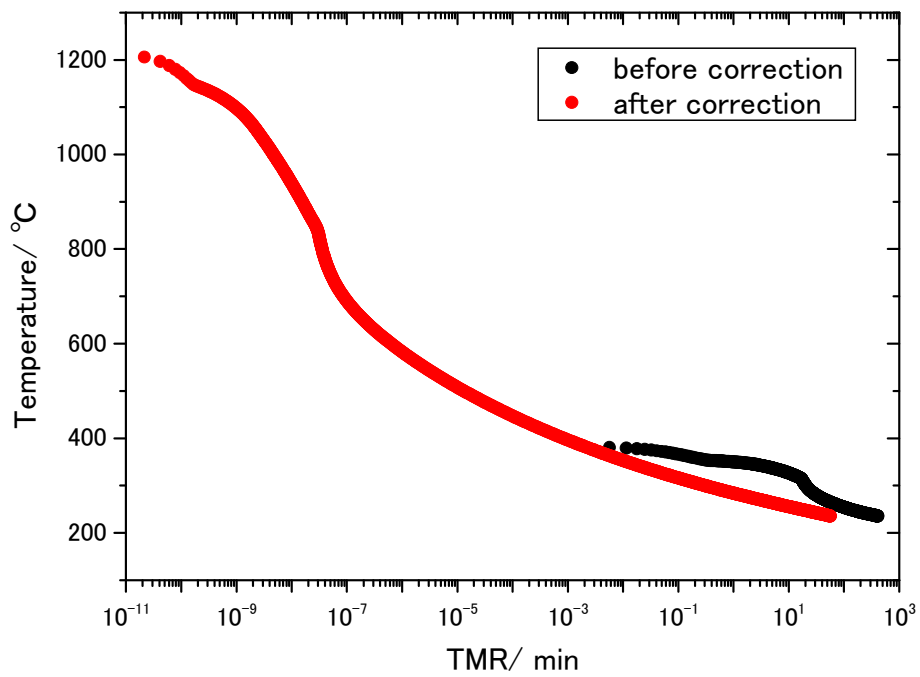
Operator: Y. S.



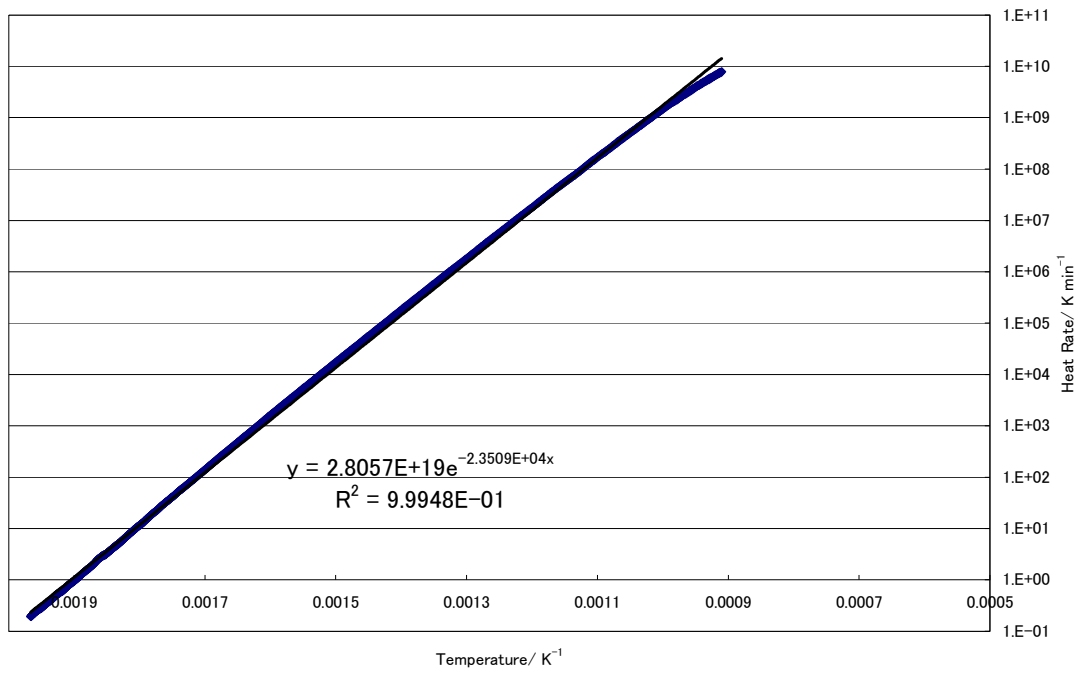
Time vs. Temperature and Pressure



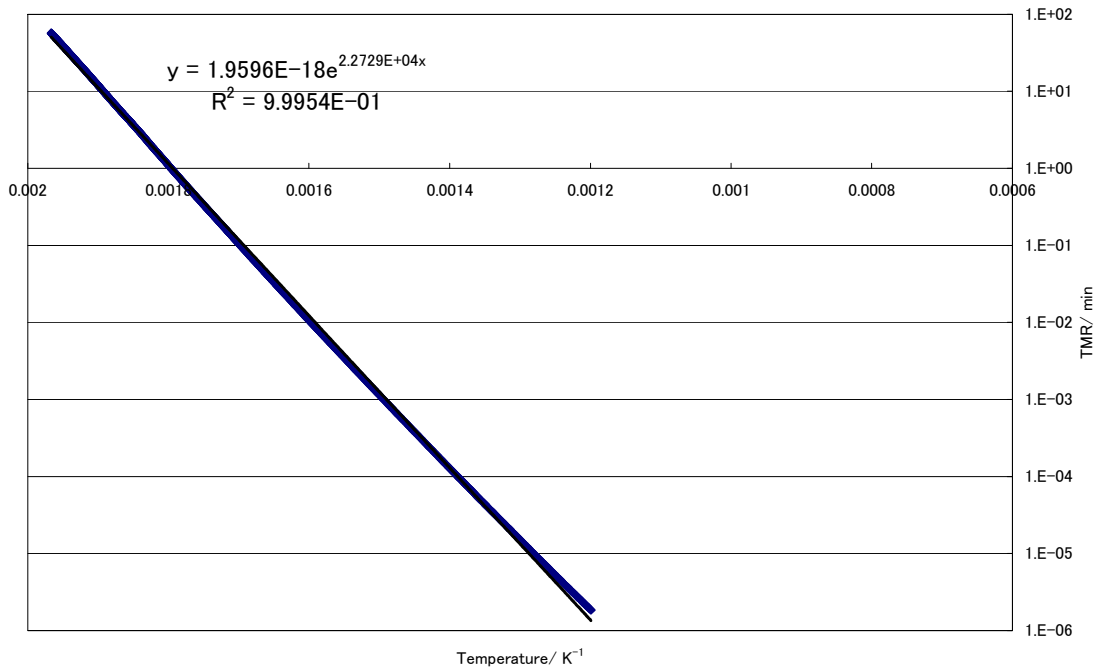
Temperature vs. Self heating rate



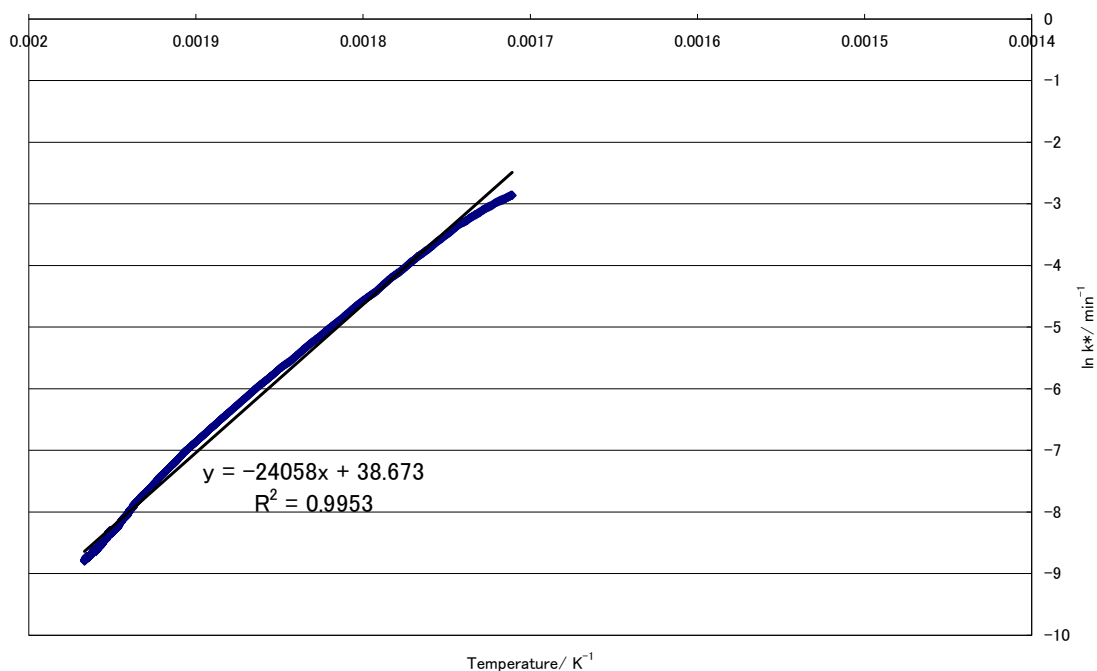
TMR vs. Temperature



Temperature vs. Self heating rate (approximate calculation)



Temperature vs. TMR (approximate calculation)



Arrhenius equation (approximate calculation)

| | | |
|---|--|--------------------|
| | Date | 2009/2/16 |
| Measuring conditions | ARC device | NewARC (TIAX, LLC) |
| | Operating Institute | AIST |
| | Operator | Y. S. |
| | Material of Bomb | Hastelloy C |
| | Weight of Bomb (g) | 20.2221 |
| | Volume of Bomb (mL) | about 9 |
| | Weight of sample (g) | 0.6319 |
| | Weight of residue (g) | 0.1796 |
| | Specific heat of Bomb (J K ⁻¹ g ⁻¹) | 0.419 |
| | Specific heat of sample (J K ⁻¹ g ⁻¹) | 2.093 |
| | φ factor | 7.407 |
| | Start temperature (°C) | 40 |
| | End temperature (°C) | 400 |
| | Temperature increment (K) | 5 |
| | Waiting time (min) | 15 |
| | Searching time (min) | 15 |
| Exothermic threshold (K min ⁻¹) | 0.02 | |

| | | |
|-------------------|--|---------------------------|
| | Logging intervals (°C) | 0.15 |
| | Pressure limit (kPa) | 20000 |
| | Atmosphere | Air, atmospheric pressure |
| Results | T _o , Exothermic temperature (°C) | 235.34 |
| | Self heating rate at T _o (K min ⁻¹) | 0.026 |
| | Pressure at T _o (kPa) | 260.34 |
| | Temperature at maximum self heating rate (°C) | 381.60 |
| | Maximum self heating rate (K min ⁻¹) | 371.38 |
| | Pressure at maximum self heating rate (kPa) | 9007.6 |
| | Pressure rising rate at maximum self heating rate (kPa min ⁻¹) | 3996.8 |
| | Maximum pressure (kPa) | 9493.4 |
| | Maximum pressure rising rate (kPa min ⁻¹) | 41682 |
| | Temperature at maximum pressure rising rate (°C) | 376.02 |
| | Time to maximum rate (min) | 410.66 |
| | Maximum temperature (°C) | 407.31 |
| | Adiabatic temperature rise (°C) | 171.97 |
| | Activation energy (kJ mol ⁻¹) | 200.0 |
| | Heat of decomposition (J g ⁻¹) | 2666 |
| Corrected results | T _{ARC} , Exothermic temperature (°C) | 209.65 |
| | Time of maximum rate at T _{ARC} (min) | 546.58 |
| | Self heating rate at T _{ARC} (K min ⁻¹) | 0.02 |
| | Maximum self heating rate (K min ⁻¹) | 4.74 × 10 ¹¹ |
| | Maximum temperature (°C) | 1594.9 |
| | Adiabatic temperature rise (°C) | 1385.3 |
| | Heat of decomposition (J g ⁻¹) | 2899 |