

DMA No. 4 JUN.1989

Dynamic Viscoelastic Data of Polytetrafluoroethylene

- 1. Sample** Polytetrafluoroethylene
(Brand Name : Teflon)
- 2. Chemical Structure**
- $$\text{---} \left(\text{CF}_2 \text{---CF}_2 \right)_n \text{---}$$
- 3. Thermal History** Measured a commercial sample as it is.
- 4. Instruments** SDM5500 Rheol. Station
DMS100 Dynamic Mechanical Spectrometer
- 5. Conditions**
- Deformation mode : Bending mode
Sample Size : 20.00(ℓ) × 12.10(w) × 0.93(t)mm
Temperature Range : -150 ~ 220
Heating Rate : 2K/min
Atmosphere : N₂
Frequency : 0.5,1,2,5,10Hz

6. Transition temperature and activation energy based on tanδ

	Transition Temperature ()	ΔEa (kJ/mol)	Comments
α Transition	123 (1Hz)	347	Glass Transition
β Transition	21 (1Hz)	286	* 1
γ Transition	-99 (1Hz)	93	Local mode relaxation

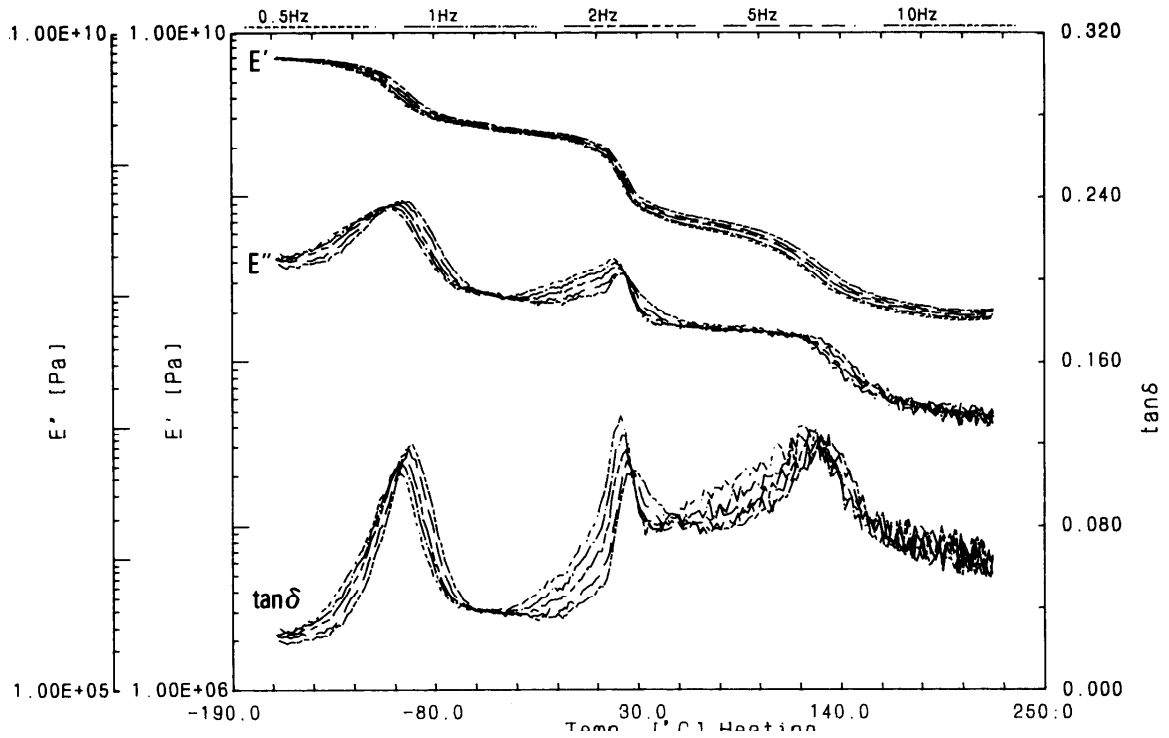
* 1 Polytetrafluoroethylene is showing crystal polymorphism, 2 types of crystal transitions are observable at this temperature range.

7. Thermal Analysis Data

T_{c1} : 22.3 , T_{c2} : 31.1 , ΔH_c : 7.2 J/g
T_m : 330.7 , ΔH_m : 37.4 J/g, DSC 10K/min

DMS

Name: Sample: PTFE
 Date: 89/05/16 16:59 Temp. mode: Ramp
 Comment: 2°C/min Deform: Flexure rec.
 1*w*t: 20.000* 12.100* 0.930 mm
 Frequency: 0.5 ~ 10 Hz



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