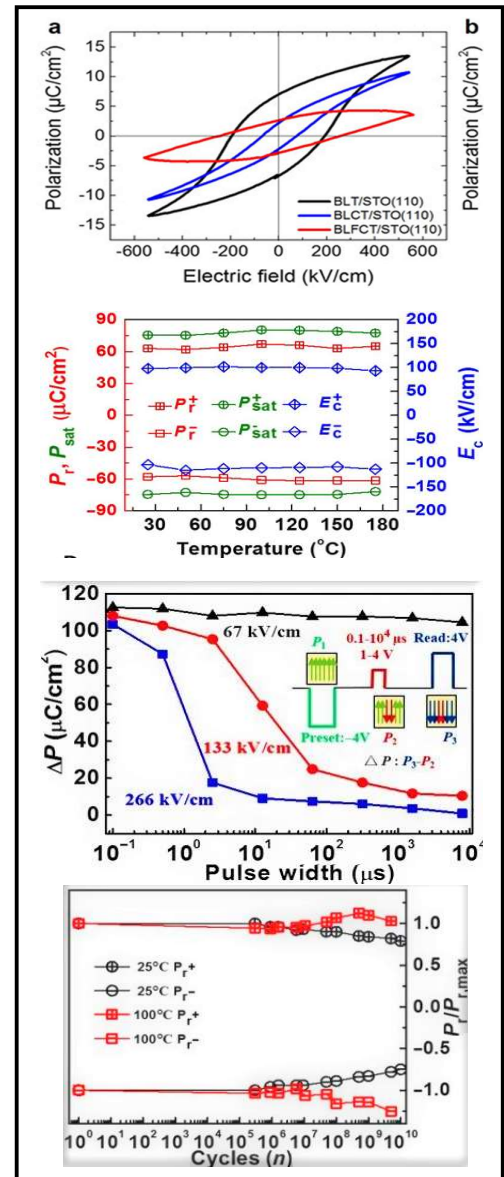


# MULTIFERROIC PE LOOP TEST SYSTEM



## ABOUT THE SYSTEM

The Ferroelectricity is a characteristic of certain materials that have continuous electric polarization that can be reversed by the application of an external electric field. All ferroelectrics are pyroelectric, with the additional property that their natural electrical polarization is reversible. The term is used in analogy to ferrimagnetism, in which a material exhibits a permanent magnetic moment. When most materials are polarized, the polarization induced,  $P$ , is almost exactly proportional to the applied external electric field  $E$ ; so, the polarization is a linear function. This is called dielectric polarization. Some materials, known as paraelectric materials, show a more enhanced nonlinear polarization. The electric permittivity, corresponding to the slope of the polarization curve, is not constant as in dielectrics but is a function of the external electric field. PE Loop Ferroelectric Test systems designed by our company are most advanced in its specifications and can undertake various tests needed by researchers. The accuracy and the resolution of the system is precise as low as femto coulomb. Details to various models available with us is described in following page.



## MODEL: 1PE 250KHZ 0.1N

### Various Tests Performed by this Model

- Ferroelectric charge at different frequencies
- Fatigue measurement
- Ferroelectric charge at different temperature
- Remnant hysteresis, curve energy, leakage current,
- Ferroelectric charge at different magnetic field

### Optional test performed by this model

- Single point C/V, PUND measurement, General pulse and sample pulse, Electrical strain vs Field



# MULTIFERROIC PE LOOP TEST SYSTEM

## TECHNICAL SPECIFICATION

<b>MULTIFERROIC PE – Main unit</b>	<b>1PE 250KHZ 0.1N</b>
Field	$\pm 10\text{KV}/ (100\text{KV}/\text{cm})$
Frequency	1 Hz – 250 KHz
Fatigue	up to 20 <sup>th</sup> order of cycles
Resolution	18 Bit (0.1nC)
Data/ Interface	ASCII (USB/RS232)
Wave Form Generator	16 Bit
ADC Resolution	18 Bit
Minimum Charge Sensitivity of Bulk	0.1nC
Maximum Charge Measurement	100uC
Minimum Sample Area	1sq.mm
Maximum Sample Dia./Thick	10-15mm/3mm
Maximum Hysteresis Frequency	10KHz (Bulk) / 250KHz (Film)
Minimum Hysteresis Frequency	1Hz
Minimum Leakage Current	0.1nA
Input Capacitance	0.1pf
<b>High Voltage Power Amplifier</b>	<b>Models</b>
TREK (0 to $\pm 4$ kV DC or peak AC)	609E - 6
NF Corp (0 to $\pm 10$ kV DC or peak AC)	HVA4321
<b>Temperature Options</b>	<b>Models</b>
Cryogenic Temperature Stage	100RT (96K – 273K)
Temperature Stage	RT250 (RT – 500K)
Resolution/ Accuracy	0.1°K/1°K
<b>Sample Holder</b>	<b>Specifications</b>
Sample Holder	Two Probe Spring Loaded
Construction	Brass
Sample Dimension	2- 10 mm diameter
Thickness (Bulk)	0.1mm to 1mm
<b>Electromagnet Options</b>	<b>0.8T /1.5T /1.8T</b>
Magnetic Field	Field 0.8/1.5/1.8 Tesla
Field Resolution	10 Gauss in 2 Tesla Range
<b>Electrical Strain Vs Field Option</b>	<b>0.1 SM 100HZ 18</b>
Frequency Range	1Hz – 10Hz
<b>*For detailed specification, please refer to respective brochures.</b>	

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