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## List of abbreviations

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IC	:	Integrated Circuits
VLSI	:	Very Large-scale Integration
ULSI	:	Ultra-large scale integration
BT	:	BaTiO <sub>3</sub>
PMN	:	PbMg <sub>1/3</sub> Nb <sub>2/3</sub> O <sub>3-x</sub>
PZN	:	PbZn <sub>1/3</sub> Nb <sub>2/3</sub> O <sub>3-x</sub>
PLZT	:	Pb <sub>1-x</sub> La <sub>x</sub> (Zr <sub>1-y</sub> Ti <sub>y</sub> )O <sub>3</sub>
CCTO	:	Calcium Cooper Titanate (CaCu <sub>3</sub> Ti <sub>4</sub> O <sub>12</sub> )
YCYO	:	Yttrium Copper Titanate (Y <sub>2/3</sub> Cu <sub>3</sub> Ti <sub>4</sub> O <sub>12</sub> )
YLCTO	:	Yttrium Lanthanum Copper Titanate (Y <sub>1/3</sub> La <sub>1/3</sub> Cu <sub>3</sub> Ti <sub>4</sub> O <sub>12</sub> )
YCZTO	:	Yttrium Copper Titanate (Y <sub>2/3</sub> Cu <sub>3-x</sub> Zn <sub>x</sub> Ti <sub>4</sub> O <sub>12</sub> )
YCTFO	:	Yttrium Copper Titanate (Y <sub>2/3</sub> Cu <sub>3</sub> Ti <sub>4-x</sub> Fe <sub>x</sub> O <sub>12</sub> )
$\epsilon$	:	permittivity or dielectric constant
$\epsilon^*$	:	Complex Quantity of dielectric constant
$\epsilon'$	:	real components of dielectric constant
$\epsilon''$	:	imaginary components of dielectric constant
$i$	:	an imaginary number such that $i = \sqrt{-1}$
$\epsilon_0$	:	permittivity or dielectric constant of free space ( $\epsilon_0 = 8.854 \times 10^{-12}$ F/m)
$\epsilon_r$	:	relative permittivity or dielectric constant of the material.
C	:	capacitance
F	:	Farad, a unit of capacitance.
$\tan \delta$	:	dissipation factor or tangent loss
$\sigma$	:	electrical conductivity of a materials
f	:	frequency
DC	:	Direct Current
AC	:	Alternating Current
$P$	:	Net polarization
$P_{\text{electronic}}$	:	Electronic Polarization
$P_{\text{ionic}}$	:	Ionic Polarization
$P_{\text{molecular}}$	:	Molecular Polarization

$P_{\text{interfacial}}$	:	Interfacial Polarization
Hz	:	hertz, a unit of frequency
f	:	frequency
$\omega$	:	angular frequency, $\omega = 2\pi f$
$\tau$	:	Relaxation time
t	:	tolerance factor,
Å	:	angstrom, a unit of smallest length
R	:	Resistance
C	:	Capacitance
$R_b$	:	Resistance of bulk
$C_b$	:	Capacitance of bulk
$R_{\text{gb}}$	:	Resistance of grain boundary
$C_{\text{gb}}$	:	Capacitance of grain boundary
eV	:	electron Volt
TG A	:	Thermo-gravimetric Analysis
DTA	:	Differential Thermal Analysis
DTG	:	Differential Thermo-gravimetry
XRD	:	X-Ray Diffraction
SEM	:	Scanning Electron Microscopy
EDX	:	Energy Dispersive X-Ray
TEM	:	Transmission Electron Microscopy
AFM	:	Atomic Force Microscopy

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