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Date:

Place: Varanasi *(Shiva Sundar Yadava)*

CERTIFICATE

It is certified that the work contained in the thesis titled *"**Studies on dielectric, ferroelectric and magnetic properties of some hexagonal perovskite oxides**"* by *"**Shiva Sundar Yadava**"* has been carried out under my supervision and that this work has not been submitted elsewhere for a degree.

It is further certified that the student has fulfilled all the requirements of Comprehensive examination, Candidacy and SOTA for the award of Ph.D. degree.

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DECLARATION BY THE CANDIDATE

I, *"Shiva Sundar Yadava"*, certify that the work embodied in this thesis is my own bona fide work and carried out by me under the supervision of *"Prof. K. D. Mandal"* from *"2012" to "2017"*, at the *"Department of Chemistry"*, Indian Institute of Technology (Banaras Hindu University), Varanasi. The matter embodied in this thesis has not been submitted for the award of any other degree/diploma. I declare that I have faithfully acknowledged and given credits to the research workers wherever their works have been cited in my work in this thesis. I further declare that I have not will fully copied any other's work, paragraphs, text, data, results, *etc*., reported in journals, books, magazines, reports dissertations, theses, *etc*., or available at websites and have not included them in this thesis and have not cited as my own work.

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It is certified that the above statement made by the student is correct to the best of my knowledge.

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Dedicated

To

My Beloved

Parents

E	Permittivity or dielectric constant
ε^*	Complex Quantity of dielectric constant
ε’	real components of dielectric constant
ε’’	Imaginary component of dielectric constant
i	Imaginary number
ε_0	Permittivity of free space
ε_r	relative dielectric constant
C	Capacitance
F	Farad
tan δ	tangent loss
σ	conductivity
f	frequency
λ	Wavelength
θ	Angle theta
°C	Degree centigrade
K	Kelvin
k_B	Boltzmann constant
T_B	Blocking temperature
X	Magnetic susceptibility
C	Curie constant
M	Magnetization
H	Magnetic field
Oe	Oersted
P	Density

B	Induced magnetic field
E	Electric field
P	Net polarization
$P_{electronic}$	Electronic polarization
P_{ionic}	Ionic polarization
$P_{molecular}$	Molecular polarization
$P_{interfacial}$	Interfacial polarization
Hz	hertz
ω	angular frequency
τ	Relaxation time
t	tolerance factor
Å	angstrom
R	Resistance
C	Capacitance
R_b	Resistance of bulk
C_b	Capacitance of bulk
R_{gb}	Resistance of grain boundary
C_{gb}	Capacitance of grain boundary
eV	electron Volt