

*Dedicated*  
*To*  
*My Beloved Family*

## **CERTIFICATE**

It is certified that the work contained in the thesis titled “*Structural and Phase Transition Studies on (1-x)BiFeO<sub>3</sub>-xSr(Fe<sub>0.5</sub>Nb<sub>0.5</sub>)O<sub>3</sub> Multiferroic Ceramics*” by “*Sushil Kumar* 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.

Date:  
Place: *Varanasi*

**Signature: Supervisor**  
**(Dr. Akhilesh Kumar Singh)**  
**(Associate Professor & Coordinator)**  
**School of Materials Science & Technology,**  
**IIT(BHU), Varanasi**

## **DECLARATION OF THE CANDIDATE**

I, **Sushil Kumar**, certify that the work embodied in this Ph.D. thesis is my own bona-fide work and carried out by me for a period from **September 2012 to June 2019**, at the **School of Materials Science and Technology**, Indian Institute of Technology, (BHU), 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 willfully copied any other's work, paragraphs, text, data, results, etc. reported in the journals, books, magazines, reports, dissertations, thesis, etc., or available at websites and included them in this Ph. D. thesis and have not cited as my own work.

Date:  
Place: Varanasi

Signature of the Student  
(**Sushil Kumar**)

## **CERTIFICATE BY THE SUPERVISOR**

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

**Supervisor**  
**(Dr. Akhilesh Kumar Singh)**  
**(Associate Professor & Coordinator)**  
**School of Materials Science and Technology,**  
**IIT(BHU), Varanasi**

**Signature of Head of Department/Coordinator of School**

## **COPYRIGHT TRANSFER CERTIFICATE**

**Title of the Thesis:** “Structural and Phase Transition Studies on (1-x)BiFeO<sub>3</sub>-  
xSr(Fe<sub>0.5</sub>Nb<sub>0.5</sub>)O<sub>3</sub> Multiferroic Ceramics”

**Name of the Student:** Sushil Kumar

### **Copyright Transfer**

The undersigned hereby assigns to the Indian Institute of Technology (Banaras Hindu University) all rights under copyright that may exist in and for the above thesis submitted for the award of the “Ph. D. degree”.

Date:  
Place: Varanasi

Signature of the Student  
(Sushil Kumar)

**Note:** However, the author may reproduce or authorize others to reproduce materials extracted verbatim from the thesis or derivative of the thesis for author’s personal use provided that the source and the Institute’s copyright notices are indicated.