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It is certified that the work contained in the thesis titled “**Synthesis and characterization of piezoelectric sodium potassium niobate toughened hydroxyapatite and bioactive glass ceramics**” by **ALOK SINGH VERMA** has been carried out under our supervision and that this work is not submitted elsewhere for any degree.

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

**Dr. Ashutosh Kumar Dubey**

**(Supervisor)**

**Department of Ceramic Engineering**

**IIT (BHU) Varanasi**

**Prof. Devendra Kumar**

**(Co-Supervisor)**

**Department of Ceramic Engineering**

**IIT (BHU) Varanasi**

## DECLARATION BY THE CANDIDATE

I, **Alok Singh Verma**, certify that the work embodied in this thesis is my own bona fide work carried out by me under the supervision of **Dr. Ashutosh Kumar Dubey, Assist. Professor** and the co-supervision of **Dr. Devendra Kumar, Professor** for a period of 4 years and 2 months from July 2015 to September 2019 at IIT (BHU) Varanasi. The material contained in this thesis has not been submitted for the award of any other degree. 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 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.

**Date:**

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**Place:** Varanasi

**(Alok Singh Verma)**

Candidate

## CERTIFICATE BY THE SUPERVISOR (S)

This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

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**(Dr. Ashutosh Kumar Dubey)**

**(Dr. Devendra Kumar)**

**Assist. Professor**

**Professor**

**(Supervisor)**

**(Co-Supervisor)**

.....

**Head of Ceramic Engineering Department**

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**Date:**

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**Place: IIT (BHU) Varanasi**

**(Alok Singh Verma)**