

**Photocatalysis and piezocatalysis induced water-cleaning using  
ferroelectric lithium niobate-based ceramics/glass-ceramics**

*A Thesis*

Submitted

By

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**(D17048)**

for the award of the degree of

**Doctor of Philosophy**



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**July, 2021**

## Declaration by the Research Scholar

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I hereby declare that the entire work embodied in this Thesis is the result of investigations carried out by me in the **School of Engineering**, Indian Institute of Technology Mandi, under the supervision of **Dr. Rahul Vaish**, and that it has not been submitted elsewhere for any degree or diploma. In keeping with the general practice, due acknowledgements have been made wherever the work described is based on finding of other investigators.



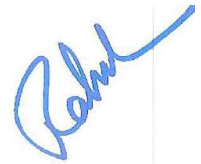
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Gurpreet Singh

## Declaration by the Research Advisor

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I hereby certify that the entire work in this Thesis has been carried out by **Mr. Gurpreet Singh**, under my supervision in the **School of Engineering**, Indian Institute of Technology Mandi, and that no part of it has been submitted elsewhere for any Degree or Diploma.



Dr. Rahul Vaish  
Associate Professor and Dean Academics  
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*DEDICATED TO*  
MY GRANDPARENTS  
**LATE SH. SHER SINGH & LATE SMT. BHAJAN KAUR**  
&  
MY PARENTS  
**SH. KEWAL SINGH & SMT. KARMJIT KAUR**

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