

**Studies on up-conversion luminescence of
Er³⁺/Yb³⁺ codoped lead bismuth borate glasses
mixed with some IIIA group sesquioxides**

Thesis submitted to

OSMANIA UNIVERSITY



In partial fulfillment for the award of degree of

DOCTOR OF PHILOSOPHY IN PHYSICS

By

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JULY 2014

DEDICATED TO

MY BELOVED PARENTS



DECLARATION

I hereby declare that the thesis entitled “Studies on up-conversion luminescence of $\text{Er}^{3+}/\text{Yb}^{3+}$ codoped lead bismuth borate glasses mixed with some IIIA group sesquioxides” is a bonified report of the thesis work carried out by me under the supervision of Prof. B. Appa Rao, Department of Physics, Osmania University, Hyderabad. I further declare that this work is original and has not been formed the basis for the award of any Degree, Diploma, Associateship, Fellowship or other similar title of any other institution.

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CERTIFICATE

This is to certify that the thesis entitled “Studies on up-conversion luminescence of $\text{Er}^{3+}/\text{Yb}^{3+}$ codoped lead bismuth borate glasses mixed with some IIIA group sesquioxides” is an authentic record of research work carried out by Mr. Y. Raja Rao under my supervision during the period of his stay. Further, I declare that the work presented in this thesis has not been formed the basis for the award of any Degree, Diploma, Associateship, Fellowship or other similar title earlier. It is also certified that Mr. Y. Raja Rao has fulfilled the course requirement and passed the qualifying examination for the Ph.D. Degree of the University.

(B. Appa Rao)
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