

**Copyright © Indian Institute of Technology
(Banaras Hindu University), Varanasi, India, 2016
All rights reserved**



भारतीय
प्रौद्योगिकी
संस्थान
काशी हिन्दू विश्वविद्यालय



INDIAN
INSTITUTE OF
TECHNOLOGY
BANARAS HINDU UNIVERSITY

DEPARTMENT OF METALLURGICAL ENGINEERING

Indian Institute of Technology (BHU), Varanasi - 221005

Established by the Institutes of Technology (Amendment) Act, 2012 (No. 34 of 2012)

Phone : 0542-2307080-81, 2369346, Fax : 0542-2369478, email : head.met@iitbhu.ac.in

UNDERTAKING BY THE CANDITATE

I, **Deepa Verma**, certify that the work embodied in the present thesis is my own work carried out by me under the supervision of Dr. R. Manna and Prof. G.V.S. Sastry for a period of six years and nine months from **July 2009** to **April 2016** at the Department of Metallurgical Engineering, Indian Institute of Technology (Banaras Hindu University), Varanasi. The matter embodied in the thesis has not been submitted for the award of any other degree or diploma.

(Deepa Verma)

CANDIDATE'S DECLARATION

I, **Deepa Verma**, certify that the work embodied in the present thesis is my own work carried out by me under the supervision of **Dr. R. Manna** and **Prof. G.V.S. Sastry** for a period of six years and nine months from **July 2009** to **April 2016** at the Department of Metallurgical Engineering, Indian Institute of Technology (Banaras Hindu University), Varanasi. The matter embodied in the thesis has not been submitted for the award of any other degree or diploma.

I declare that I have faithfully acknowledged, given credit to and referred to the research workers wherever their works have been cited in the text and the body of the thesis. I further certify that I have not willfully lifted up some other's work, para, text, data, results, etc. reported in the journals, books, magazines, reports, dissertations, thesis, etc., or available at web-sties and included them in this Ph.D thesis and cited as my own work.

Date:

Place: Varanasi

(Deepa Verma)



भारतीय
प्रौद्योगिकी
संस्थान
काशी हिन्दू विश्वविद्यालय



INDIAN
INSTITUTE OF
TECHNOLOGY
BANARAS HINDU UNIVERSITY

DEPARTMENT OF METALLURGICAL ENGINEERING

Indian Institute of Technology (BHU), Varanasi - 221005

Established by the Institutes of Technology (Amendment) Act. 2012 (No. 34 of 2012)

Phone : 0542-2307080-81, 2369346, Fax : 0542-2369478, email : head.met@iitbhu.ac.in

CERTIFICATE FROM THE SUPERVISORS

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

Dr. R. Manna
Supervisor
Department of Metallurgical
Engineering
Indian Institute of Technology
(Banaras Hindu University)
Varanasi-221005

Prof. G.V.S. Sastry
Co-Supervisor
Department of Metallurgical
Engineering
Indian Institute of Technology
(Banaras Hindu University)
Varanasi-221005

Prof. R.K. Mandal
Head
Department of Metallurgical Engineering
Indian Institute of Technology
(Banaras Hindu University)
Varanasi-221005



भारतीय
प्रौद्योगिकी
संस्थान
काशी हिन्दू विश्वविद्यालय



INDIAN
INSTITUTE OF
TECHNOLOGY
BANARAS HINDU UNIVERSITY

DEPARTMENT OF METALLURGICAL ENGINEERING

Indian Institute of Technology (BHU), Varanasi - 221005

Established by the Institutes of Technology (Amendment) Act. 2012 (No. 34 of 2012)

Phone : 0542-2307080-81, 2369346, Fax : 0542-2369478, email : head.met@iitbhu.ac.in

COURSE/COMPREHENSIVE EXAMINATION/PRE-SUBMISSION SEMINAR COMPLETION CERTIFICATE

This is to certify that Mrs. **Deepa Verma**, a bonafide research scholar of this Department, has satisfactorily completed the course work, comprehensive examination and pre-submission seminar requirements which are a part of her Ph.D. programme.

Date:

Place: Varanasi

Prof. R. K. Mandal
Head

Department of Metallurgical Engineering
Indian Institute of Technology
(Banaras Hindu University)
Varanasi-221005



भारतीय
प्रौद्योगिकी
संस्थान
काशी हिन्दू विश्वविद्यालय



INDIAN
INSTITUTE OF
TECHNOLOGY
BANARAS HINDU UNIVERSITY

DEPARTMENT OF METALLURGICAL ENGINEERING

Indian Institute of Technology (BHU), Varanasi - 221005

Established by the Institutes of Technology (Amendment) Act, 2012 (No. 34 of 2012)

Phone : 0542-2307080-81, 2369346, Fax : 0542-2369478, email : head.met@iitbhu.ac.in

COPYRIGHT TRANSFER CERTIFICATE

Title of the Thesis: **Microstructural Evolution and Mechanical Properties of an Interstitial-Free Steel Processed by Equal-Channel Angular Pressing**

Candidate Name: **Deepa Verma**

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.

(Deepa Verma)

INDIAN INSTITUTE OF TECHNOLOGY
(BANARAS HINDU UNIVERSITY)
DEPARTMENT OF METALLURGICAL
ENGINEERING
VARANASI- 221005

0542-2307080-81, 2369346 (O),

Fax: 0542-2369478

e.mail : head.met@itbhu.ac.in

Met-HD/ 2015-16/

Dated: 09.03.2016

Pre Submission Seminar Certificate

A Pre Submission Ph.D. Seminar of Ms. Deepa Verma D/o Mr. Ganeshi Lal bearing roll no. 09607EN001 (Enrollment No.-318934) was conducted successfully on 03.03.2016 at 03.00 PM by the Departmental Research Committee under the Chairmanship of thesis supervisor Dr. Rampada Manna Department of Metallurgical Engineering, I.I.T., B.H.U. Ms. Deepa Verma may be allowed to submit the Ph.D. Thesis entitled "Microstructural Evolution and Mechanical Properties of an Interstitial-Free Steel Processed by Equal-Channel Angular Pressing".


(R.K.Mandal) 9/3/2016
HEAD OF THE DEPARTMENT

विभागाध्यक्ष/HEAD
धातुकीय अभियांत्रिकी विभाग
Deptt. of Metallurgical Engg.
भारतीय प्रौद्योगिकी संस्थान (काशी हिन्दू विश्वविद्यालय)
Indian Institute of Technology (Banaras Hindu University)
वाराणसी-221005/Varanasi-221005 9/3/16