



GE

GE India Technology Centre Pvt. Ltd.  
122, EPIP, Whitefield Road  
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India

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## Annexure

During his internship at GE Global Research, Shashank worked with directionally solidified nickel based superalloys, that are commonly used in gas-turbines. Some of these alloys are known to undergo recrystallized (RX) grain formation during thermo-mechanical-treatments, limiting their heat treatment (HT) temperature. Internal stresses due to various processing conditions such as, grid blasting, machining etc. are reported to be responsible for nucleation of RX during high temperature HT.

Shashank's work was aimed at understanding RX phenomenon under compression deformation conditions at elevated temperatures. He worked closely with Materials Characterization Team at GE to understand microstructure of these alloys under different deformation + processing conditions.

Shashank was involved in sample preparation and chemical etching of specimens for microstructure characterization. He then used optical and scanning electron microscopy to analyze the material microstructure. Shashank came up with a simple yet novel idea of using external light source with different angles that enabled quick differentiation between RX grains and misleading microstructural features.

Throughout his stay at GE, Shashank displayed exception technical curiosity as well as a great aptitude for research, that is truly beyond his years!

It was great having Shashank at GE, and we wish him the very best for his future endeavors.

(Dr. Sachin Nalawade)  
Scientist, Materials Modeling Lab  
GE Global Research

(Dr. Sanjay Sondhi)  
Manager, Materials Modeling Lab  
GE Global Research



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## Certificate of Internship

This is to certify that Mr.Shashank H R, SSOID: 212411398 was engaged as an intern from 5-May-14 to 18-Jul-14 and worked on Investigation of recrystallization due to compression straining in a Ni-based superalloy.

During this period Mr.Shashank H R met all expectations of the project and his conduct was found to be satisfactory.

We take this opportunity to thank and wish him all the best in his future endeavours.

for GE India Technology Center Pvt.Ltd.,

**AUTHORISED SIGNATORY**

Date: 21.07.2014  
Place: Bangalore

**Note:** Please acknowledge the receipt of this certificate.

Name: Mr.Shashank H R

Signature:  
Date:  
Place: