



**IIT Bhubaneswar**

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### **Recommendation letter for Mr. Dusi Durga Prasad**

I am very happy to write this letter of reference for Dusi Durga Prasad whom I have known for 2.5 years now. Durga Prasad was a Masters' student in Thermal Science & Engineering at the School of Mechanical Sciences, IIT Bhubaneswar from 2018 to 2020. I have known him since his course work began in 2018. Durga Prasad first contacted me to guide him for his M.Tech thesis work titled "Modeling of binary alloy solidification using OpenFOAM".

Durga Prasad spent one year under my guidance for his thesis work and I was really happy with his performance. From the very beginning he was clear with his objective of working on challenging problems which have good learning potential. He worked for his project using the OpenFOAM tool. For this he learned the intricacies of OpenFOAM on his own. Subsequently, he modified the OpenFOAM solver to implement the governing equations for binary alloy solidification consisting of the modified enthalpy based energy equation, modified Navier Stokes equations and species concentration equations. This was a very challenging task which he completed successfully during his thesis work. He validated the developed model with results from existing literature and subsequently performed parametric studies for different geometries and alloy compositions. The main achievement of his thesis work was that the developed model could be used for simulating melting and solidification in complicated and non-regular geometries as it was based on OpenFOAM. His work was well appreciated by the thesis examination committee also. I would like to emphasize here that one of the main strengths of Durga Prasad is that he could develop the entire model on his own with minimal suggestions from me. It shows his capability to solve complicated research problems on his own without much hand-holding. Durga Prasad also performed well in other aspects of his curriculum such as course work and seminars. His presentation and communication skills were also good as evident from his seminar presentation.

In summary, I feel that Durga Prasad will be a very good candidate for PhD and I strongly recommend him for admission to PhD program.