



Guidelines for writing an Abstract

Word limit: **250 – 300** words

Font: **Times New Roman**, Font Size: **12**

While writing the abstract, ensure to address the following key questions:

1. Purpose

- Clearly state the purpose of the work. Why is it necessary?

2. Content

- Describe the work presented.

3. Methodology

- Briefly explain how the work was done. Keep it concise, within two lines.

4. Results

- Summarize the outcomes and findings of the work.

5. Relevance

- Explain the relevance of the work and its potential applications (e.g., research, industry)

Remember to be precise and keep your abstract within the specified word limit.

Sample abstract –

Cold working of additively manufactured steels (*Team Name and members*)

Cold work on additively manufactured (AM) steels presents a promising avenue for enhancing the mechanical properties and performance of steel components. This study investigates the effects of cold working processes, such as rolling, forging, and shot peening, on the microstructure and mechanical behaviour of AM steels. The research highlights the potential of cold work to refine grain structures, reduce porosity, and improve hardness and tensile strength. By applying various cold working techniques to AM steel specimens, the study examines the resultant changes in microstructural features, including dislocation density and phase transformations. The findings indicate that cold work can significantly enhance the mechanical properties of AM steels, making them suitable for high-performance applications in industries such as aerospace, automotive, and biomedical engineering. Molecular dynamics (MD) has been used for dislocation study as well as Finite Elements Method simulations are performed on equiaxed as well as uniformly distributed pores in

microstructure, for studying the actual effect of pores in AM steels. However, the study also identifies challenges associated with cold working AM steels, such as the potential for residual stresses and anisotropy, which may affect the overall performance and reliability of the components. Future research directions are proposed to address these challenges, including the optimization of cold working parameters and the development of hybrid manufacturing processes that combine additive and subtractive techniques. The study concludes that cold work on AM steels holds significant potential for advancing the field of materials science and engineering, offering new opportunities for the design and fabrication of high-performance steel components.