

NML – National Metallurgical Laboratory

The National Metallurgical Laboratory (NML) is one of India's oldest CSIR laboratories, located in Jamshedpur, Jharkhand. Established in 1950, it is dedicated to research in metallurgy, minerals, and materials science, supporting India's industrial growth and technological advancement.



Objectives of NML

Conduct fundamental and applied research in metallurgy and materials science. Develop new alloys, steels, and advanced materials for defence, aerospace, automotive, and energy sectors. Provide industrial consultancy, testing, and technology transfer.

Support national missions like Make in India and Innovate in India. Promote **green metallurgy** and sustainable resource utilisation.

Achievements

Developed special steels and alloys for defence, aerospace, and automotive industries. Pioneered corrosion science and Remaining Life Assessment (RLA) of industrial components. Established pilot plants for mineral beneficiation and metallurgical processes.

Awards & Recognitions

Scientists at NML have received Shanti Swarup Bhatnagar Prizes and other national awards. Recognised for technology transfer and industrial consultancy. Commended for contributions to India's steel industry and defence sector.

Contributions

Strengthened India's steel and metallurgical industries since independence. Supported energy, infrastructure, and defence sectors with advanced materials.

Played a key role in industrial problem-solving through consultancy and testing. Advanced corrosion prevention and failure analysis techniques for critical components.

Future Directions

Research in nanomaterials, advanced alloys, and sustainable metallurgy. Support India's energy, defence, and infrastructure sectors with innovative materials. Expand industry partnerships for technology transfer and commercialisation. Contribute to circular economy and green metallurgy initiatives.

Conclusion

NML has played a vital role in India's industrial and scientific development through its contributions to materials research, alloy development, corrosion studies, and failure analysis. Its work has strengthened key industries, while its focus on sustainable and green metallurgy continues to support future technological advancements.