

THE WORLD COMES HERE.
TMS2025
154th Annual Meeting & Exhibition



March 23–27, 2025
MGM Grand Las Vegas
Hotel & Casino
Las Vegas, Nevada, USA
#TMSAnnualMeeting



SUBMIT AN ABSTRACT FOR THE FOLLOWING TMS2025 SYMPOSIUM:

MATERIALS SYNTHESIS AND PROCESSING

Electrical Steels

Electrical steels are an essential energy converting material widely used in generators, transformers, electric motors, and other electromagnetic devices to confine the magnetic flux and amplify the conversions between electricity and other forms of energy. The efficiency of these devices is largely determined by the magnetic properties of the electrical steel sheets, and has a huge impact on the generation, transmission, and use of electrical energy. With the strides towards the decarbonization of the global economy by promoting renewable energies, electrical steels are increasingly gaining momentum in the steel market, especially for the production of electric vehicles in the transportation sector, which is projected to grow significantly in the coming years. Microstructure and texture control to optimize the magnetic properties is still the focus of electrical steel research. How to economically manufacture high silicon electrical steel sheets using traditional technical routes is another area to be explored. There are also new theories, processing technologies and characterization methods proposed to advance electrical steel development and manufacturing. This symposium provides a venue for researchers, engineers, experts and enterprises from the world to share experiences, exchange ideas and establish collaborations in this field.

The symposium includes but is not limited to the following topics:

- Relationships among processing, microstructure/texture, and magnetic properties of electrical steels.
- Alloy development for high silicon electrical steels with improved formability.
- Casting and thermomechanical processing technologies to enable economical production of high silicon electrical steels.
- Theories regarding the evolution of texture and microstructure during all the electrical steel manufacturing stages.
- Novel characterization methods and tools to evaluate the microstructure, texture and magnetic properties of electrical steels.
- Alternative manufacturing methods to produce electrical steel sheets.
- Coating and bonding of electrical steel laminates.
- The manufacturing and assembling of electrical steel cores.
- Effect of manufacturing processes on the energy losses of electrical steel laminates. (10) Other properties of electrical steels, e.g., chemical, physical, mechanical, electrical, etc.

ORGANIZERS

Youliang He, CanmetMATERIALS, Natural Resources Canada; **Kester Clarke**, Los Alamos National Laboratory; **Jun Cui**, Iowa State University

SYMPOSIUM SPONSORS

TMS Materials Processing & Manufacturing Division, TMS Magnetic Materials Committee, TMS Steels Committee

www.tms.org/TMS2025

QUESTIONS?

Contact programming@tms.org