BEHNAZ RAHMATMAND

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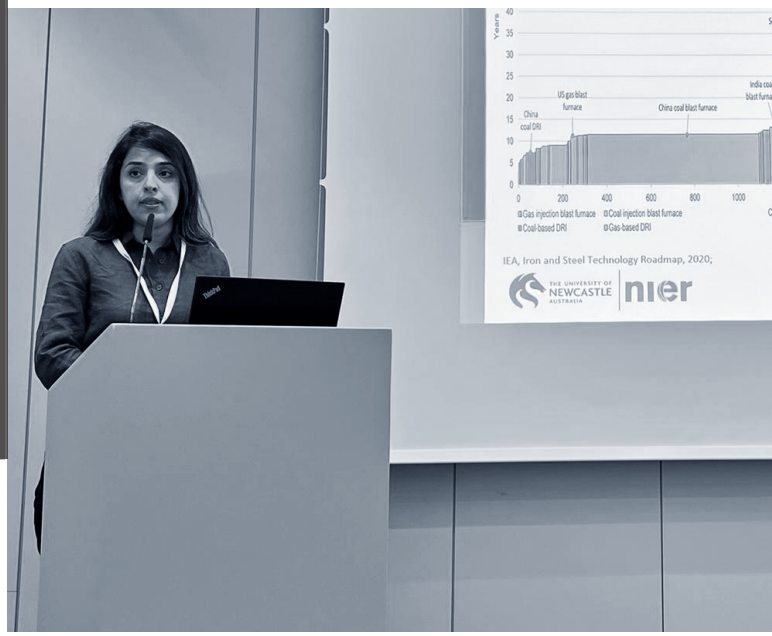
Centre for Ironmaking Materials Research at the University of Newcastle



RESEARCH FOCUS

Behnaz's research is on sustainable and low-carbon ironmaking technologies including hydrogen utilisation in blast furnaces (BF) and the effect of these new technologies on coke quality requirements. Behnaz also has research experience in the fields of carbon capture and chemical process modelling.

BF is the primary technology for ironmaking, and it accounts for 70% of global capacity. The raw materials for BF are coke, made from metallurgical coal and ferrous materials such as sinter and lump ore. BF operators are trailing injecting Hydrogen into the BF to reduce the carbon emissions of the operation, which also changes the chemistry and mechanisms of the reaction inside the BF. Behnaz is looking at how these changes impact the quality requirements of coke in a low carbon BF operation by experimenting with different methods to simulate different parts of the BF.

RESEARCH VISION

"Several exciting developments are underway in the research space that have the potential to significantly improve the steel industry's journey toward lower emissions and a more sustainable future. These include hydrogen-based ironmaking, biomass and renewable energy integration, carbon capture and utilization, and direct electric arc furnaces along with sustainable supply chains, policy and financial support. These have the potential to transform the steel industry's environmental impact, driving it toward a more sustainable and low-emission future. As we continue to stay updated with the latest research and industry advancements, I believe our organization can proactively embrace these opportunities to contribute to a greener steel sector."

"The outcome of this research contributes to understanding the raw material requirements in a market that is shifting towards low carbon BF operation. This fundamental knowledge will help the Australian industry respond to the shifting market." Behnaz Rahmatmand