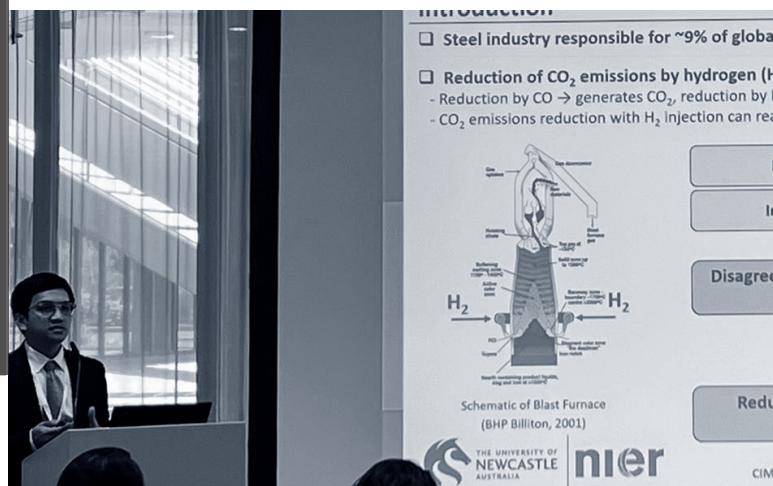


# MUHAMMAD IRFAN AHADIAN BARUSTAN

PhD candidate, BHP scholarship  
& International Postgraduate  
Research Scholarship recipient

Centre for Ironmaking  
Materials Research at the  
University of Newcastle



## RESEARCH FOCUS

Prior to starting his PhD program, Irfan had been working in the steel industry as a blast furnace engineer for about 10 years.

Currently Irfan is helping to decarbonise the steel production industry by investigating the optimal sintering quality and conditions for blast furnace (BF) with hydrogen (H<sub>2</sub>) injection.

The aim of Irfan's research is to produce sinter ore with high strength and reducibility, and low reduction degradation for BF's with high H<sub>2</sub> usage. He is examining the relationship between sintering conditions, sinter mineralogy, structure and quality, and assessing optimal sintering conditions concerning reducibility and reduction degradation under high H<sub>2</sub> usage. It is hoped the results will help the steel and mining industry to maintain the utilisation of Australian iron ore fines and optimise the sintering process to secure stable BF operation during high H<sub>2</sub> usage.

## RESEARCH VISION

“Recently, there has been numerous research and technological developments to decarbonise steel production. There is no single solution to achieve this and it will depend on the availability of resources and characteristics of the current steel production process.

The blast furnace will still exist for at least a few decades, and it is important that we can reduce the CO<sub>2</sub> emissions from this technology. One of the options to reduce CO<sub>2</sub> emissions is by injecting hydrogen. I hope some parts of my work can provide a better understanding of how we can optimise the sintering process to satisfy the blast furnace with hydrogen injection.”

“This is a really good time to be undertaking research to decarbonise steel production as academics, industry and also the government are really interested in this area. In the near future there will be lots of new technology developed and research has a really important role in making this happen.”  
Muhammad Irfan Ahadian Barustan