UNIVERSITY OF WOLLONGONG AUSTRALIA

PhD research scholarship on

Phosphorous and Iron Recovery from Steelmaking Slag for Effective Recycling

Project background:

Phosphorous (P) is one of the most detrimental impurities in steel, decreasing its low-temperature toughness. Changing ore grades in Australia with increasing P content, are placing a substantial proportion of these ore products at a competitive disadvantage. To reduce higher price penalties for high P ores, a new treatment methodology is required whereby more P is removed from steel plant streams.

Effective removal of P directly from iron ores (e.g. beneficiation, high temperature roasting, leaching) has, to this point, proven to be impractical or very difficult. P removal is thermodynamically unfavourable in blast furnace ironmaking and has to be removed from the iron (hot metal) through hot metal pre-treatment and steelmaking processes. The slags produced in these latter processes are high in P and cannot readily be recycled, hence, the research focus has shifted towards (1) lowering the level of P in steelmaking material streams, thereby allowing higher rates of recycling within the steel plant; and (2) the production of a P-rich slag which could potentially be utilised externally, such as in the agricultural area.

This project aims to understand the underlying principles that control P partitioning in slags.

Scholarship details:

Applications are invited for a full-time Ph.D. research scholarship within the School of Mechanical, Materials, Mechatronics and Biomedical Engineering at The University of Wollongong, Australia, supervised by Prof. Brian Monaghan. The scholarship is for a period of three years, subject to satisfactory progress with an annual stipend of $ 26,288.

Eligibility requirements:

The candidate should possess at least an Honours degree in materials science/metallurgical engineering or equivalent.

Desirable:

(a) Further qualifications, e.g. Masters Degree with significant Materials/Metallurgy research component, or relevant research work experience.
(b) Experience in high temperature experimentation.

Contact details:

Prof. Brian Monaghan,
monaghan@uow.edu.au
Program Leader Steel Research Hub

Director of the Engineering Materials Research Strength, Engineering Materials, School of Mechanical, Materials, Mechatronic and Biomedical Engineering (MMMB), Room 124/Building 1, University of Wollongong, NSW 2522 T 61 2 4221 4580

http://eis.uow.edu.au/engineering-materials/index.html