

RESEARCH DIRECTIONS

Photo-Fenton chemistry in acidified waterways

Dr Jason Reynolds of the School of Science and Health, with students Matthew Scibberas (PhD) and Tiffany Cole (Hons), has been supported by the New South Wales Government through its Environmental Trust to investigate the production of reactive oxygen species in acid mine drainage and acid sulfate soil landscapes. This research aims to provide evidence that photo-Fenton production of reactive oxygen species is a key driver for several key chemical reactions and could be manipulated to reduce pollution in these landscapes.

'Degradation of the environment in landscapes where there is mining is a significant problem in Australia', says Dr Reynolds. 'There may be impacts from this activity ranging from ecological impacts to infrastructure damage. Some of these impacts may be driven by reactive oxygen species. Initial pilot research has found a hundred-fold increase of reactive oxygen species in mine site discharge areas compared to natural background concentrations. These initial findings were used to secure funding from the NSW Environmental Trust to develop the research further.'

This project will undertake detailed research on the diurnal variations of reactive oxygen species in natural and modified environments over a continual several-day period. Quantification and modelling of reactive oxygen species carried out in this project will allow for a clearer understanding of the aqueous chemistry and may be a first step in a new model for landscape management and remediation.



Project Title: Reactive oxygen species in acidified waterways: a new paradigm
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