***The magmatic controls on Ni-Cu-PGE mineralisation in the Platreef, northern limb of the Bushveld Complex, South Africa***

Platinum-group elements (PGEs) are critical metals which are vital components in internal combustion engines, hydrogen fuel cells and battery technologies. The Platreef, northern limb of the Bushveld Complex, South Africa, is widely regarded as one of the world’s largest PGEs resources. It differs from the wider Bushveld in several key ways, including PGE mineralization being spread over much greater thicknesses compared to deposits including the Merensky Reef and UG2 chromitite.

In this study, petrology and bulk geochemistry are examined to establishing the primary magmatic stratigraphy of the newly discovered deeper Platreef at Sandsloot. The Platreef is thought to have formed from discrete magmatic units, and several, including a barren zone, PGE-reef, and base metal zone, are identified at Sandsloot. Niggli Numbers, a forgotten by highly useful geochemistry tool, are used to demonstrate the key role of dolomite contamination in elevating PGE grades along the northern limb.