

## **CO<sub>2</sub> mineralization from Fe-Ti-V ore tailings in Pan-xi region, China**

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The use of tailings for sequestration atmospheric CO<sub>2</sub> has attracted a lot of attention in recent years (Meyer et al., 2014). Tailings are processed by crushing, grinding and milling procedures. The characteristics of tailings include fine particle size and large surface area, and hence they can sequester atmospheric CO<sub>2</sub> much faster as compared with the silicate and carbonate rocks.

In this study, the potential and rates for CO<sub>2</sub> mineral carbonation at Pan-xi region Fe-Ti-V ores Tailings of Southwest China are reviewed. The storage capacity of the 49 tailings impoundments in this region has reached approximately  $11.0 \times 10^8$  m<sup>3</sup>, potentially contributing to over 782.5 million tons of CO<sub>2</sub> sequestration. Reserves in the tailings are present in multiple minerals in the following order: plagioclase > pyroxene > others, and plagioclase and pyroxene are considered to be the most suitable minerals for dissolve of Fe<sup>2+</sup>, Ca<sup>2+</sup>, and Mg<sup>2+</sup>. Over 8.39 kt of the CO<sub>2</sub> will be absorbed annually by this tailings and it is considered the total tailings will be exhausted within 9326 years by CO<sub>2</sub> mineralization. The crushed gangue scattered in the mining area and the particles in the river are the real potential for CO<sub>2</sub> mineralization and more research is required. In China, with over 10,000 tailings dams, the CO<sub>2</sub> sequestration potential will increase considerably in the future as compared with the present 49 impoundments. The ore tailings CO<sub>2</sub> sequestration method should therefore attract much attention.

[1] Meyer, N. A., Vögeli, J. U., Becker, M., Broadhurst, J. L., Reid, D. L., Franzidis, J. P., 2014. Mineral carbonation of PGM mine tailings for CO<sub>2</sub> storage in South Africa: A case study. *Minerals Engineering*, 59: 45-51.