



Contribution ID: 386

Type: **Poster (+) Presentation**

Stabilization of mine tailings using biological induced precipitation methods for wind erosion control

Friday, 4 June 2021 09:40 (1 hour)

Wind erosion (dust) is a severe problem for mine tailings industry, as it poses environmental and safety concerns to public. Biological induced precipitation methods are found to be able to improve the resistance of soil for wind erosion. In this study microbiologically carbonate precipitation (MICP) based on urea hydrolysis was used to stabilize the surface of different tailings materials. An experimental study was performed on soil-filled pans that were prepared using loosely packed tailings material and treated using percolation of reactive solutions. Penetration testing and calcium carbonate content analysis were utilized to optimize the treatment strategy and assess the strength and durability of the cemented crusts. The results were compared with the alternative, already existing treatment strategies using magnesium chloride and xanthan gum. The MICP treated pans showed an increase in strength and durability with increasing concentration of the cementation solution and number of treatments. MICP treated pans showed higher durability upon wetting and drying cycles compared to existing treatment strategies.

Time Block Preference

Time Block A (09:00-12:00 CET)

References

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Student Poster Award

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Session Classification: Poster +

Track Classification: (MS5) Biochemical processes and biofilms in porous media