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## **A clay-based geopolymer in loess stabilization to water and wind soil erosion**

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Soil erosion has environmental and socioeconomic significances. Most of the loess soils throughout the world are subjected to increased land uses such, which increased soil destruction and dust emission to the atmosphere. There is a distinguish interest in applications for dust control and soil stabilization. This study examines empirically the use of a metakaolin-based geopolymer for dust control and soil stabilization in a semi-arid loess soil that is subjected to land uses and erosional processes. The application of the geopolymer for dust control in comparison with common products (brine, bitumen, PVA) resulted with no soil erosion and dust emission by wind tunnel simulations. As a soil stabilizer, the geopolymer tested in this study provides remarkably good results in the tensile test. The most successful composition of the geopolymer, which is activation solution of sodium silicate and sodium hydroxide (NaOH) together with an addition of 30% metakaolin, obtained soil strength of 23900N after 28 days. The attempt to replace NaOH with lime (CaO) in the activation solution was far inferior to the original composition.