

Mineralogical development in a lime treated clayey sand soil

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Three samples of lime treated clayey sand soils and a control sample were cured for one month at room temperature before being analysed using X-Ray Fluorescence (XRF), X-Ray Diffraction (XRD) and scanning electron microscopy (SEM). The XRF data shows high abundances of SiO₂ (73.57%–80.45%), Al₂O₃ (10.77%–11.09%), L.O.I (4.38%–7.38%), Fe₂O₃ (2.32%–2.88%), K₂O (0.88%–1.03%) and CaO (0.03%–4.20%), whereas the other major elements are lower than 1.00%. The treated samples with 2% and 6% of lime show an increasing concentration of CaO about 1.41% and 4.20% respectively. The X-ray diffractograms and scanning electron micrographs detected the appearance of quartz and kaolinite in the control soil as well as in the treated soil samples. The development of new cementitious minerals in treated soil appear in low intensities in the X-ray diffractograms, due to their low crystalization. Scanning electron micrographs also show the development of new cementitious minerals, and modification of the surface micromorphology of the treated soil due to increasing concentration of lime.
