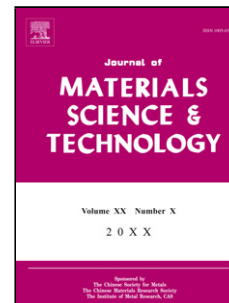


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## Formation process of akaganeite in the simulated wet-dry cycles atmospheric environment

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In order to clarify the formation mechanism and conditions for akaganeite in long-term exposure, the influence of the former corrosion results on akaganeite formation was investigated by simulated experiments in laboratory. The combination of XRD, FTIR, SEM and EPMA enabled the identification of the rust layer formed on the surface. Accordingly, the nature of the rust layer and the amount of the corrosive species in the rust layer varied with the extension of the exposure. Among them, comparing with the corrosion condition in initial stage, the structure of rust layer after repeated wet-dry cycles was disadvantage for akaganeite formation. Element Cl aggregated at the interface between rust and substrate in the thick part can participate in the formation of akaganeite after the rust layer covered removed. The accumulation effect of salt deposited contributed to akaganeite formation under the condition that salt deposition rate was relatively low.

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