



## **Micro-structures and their Formation Mechanisms of typical Redoxi-morphic Features of Hydragric Anthrosols**

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Hydragric Anthrosols are soils subjected to frequent artificial alternation of wetting and drying for rice cultivation. The micro-structures of several typical redox-morphic features often seen in Hydragric Anthrosols, namely root pore coating, concentric iron-ring and bleached coating, were analyzed by combining micro-morphological observation and electronic energy disperse spectrometer (EDS) determination of the chemical composition of micro-zones. The results showed that root pore/fissure coating was formed through the enrichment of oxidized ferrous iron ( $\text{Fe}^{2+}$ ) on the surface of root pore/fissure. The oxidation process occurred on the crystal surface of Al-silicate clay minerals. It was illustrated that the formation of rizospheric concentric iron-rings involved a self-organized process of reaction-transfer-reaction feedback of hydrogen ion during the oxidation-reduction cycles, which led to the formation of banded iron-rich and iron-poor zones. Bleached coating could be separated as iron (and/or manganese) –depleted and clay-depleted ones, which were obviously different from each other in micro-structure and chemical composition, in which the later redoxi-morphic feature not only had stronger loss of iron and manganese but also was accompanied by destruction of Al-silicate clay