異なる土壌タイプに存在する土壌団粒階層構造を形成する有機無機集合体の特徴
Nature of organo-mineral particles at a lower level of aggregate hierarchy among contrasting soil types

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Soil organic matter (SOM) accounts for a major portion of terrestrial C and is considered to be stabilized against microbial degradation due partly to its interaction with soil minerals. Particle-size fractionation is an effective approach to distinguish different types of organo-mineral particles. Many early studies showed hierarchical structure of organo-mineral particles that are bound together by various binding agents. Yet how organic compounds of microbial and plant origins interact with mineral phases and how such interaction contributes to the hierarchical structure remain unclear. Facing climate change induced by C imbalance, it is particularly important to better understand the factors controlling C concentration and its mean residence time among particle size fraction in different soil types. Here we focused on the sonication-resistant organo-mineral particles collected by particle size fractionation from four soil types of contrasting minerology. We hypothesize that the distribution of percent of modern carbon among particle size fractions differ among the soil types due to the difference in the major forms of organo-mineral associations. We compare top soils (A horizon) from four soil types: allophanic Andisol, non-allophanic Andisol, Mollisol, Ultisol. The recovered particle size fractions are characterized by selective dissolution (pyrophosphate, oxalate, and dithionite), isotopic contents (^{15}N, ^{13}C, ^{14}C), and 13-C solid state NMR. We will discuss common patterns and differences among the four soils.

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