# Layer Charge Analysis: Problems and Opportunities. (S09-laird165220-Oral)

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## Abstract:

Layer charge is a fundamental property of 2:1 phyllosilicates that greatly influences most clay properties, including; cation exchange, hydration, swelling, and interactions with both natural and anthropogenic organic molecules. The structural formula and alkylammonium methods are the two primary methods of determining layer charge. Both methods have serious limitations. Accurate layer charge determinations by the structural formula method require accurate total chemical analysis of monomineralic specimens. The alkylammonium method can be used with samples having more than one mineral phase, but the alkylammonium method seriously underestimates the layer charge of high charge clays and may overestimate the layer charge of low charge clays. Previously reported evidence of layer charge heterogeneity based on alkylammonium interpretations is inaccurate. An empirically corrected alkylammonium approach for estimating mean layer charge is proposed.

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