# CLAY MINERALS FUZZIFIED

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**Abstract :** Clay minerals are complex materials having no distinct compositions and no clear compositional boundaries. A novel approach has been developed for describing the chemical nature of clay minerals using fuzzy logic. This allows quantification of the compositional vagueness in such systems. Thus, a clay mineral can be described in terms of how compositionally representative it is, of its own type ('belonging-ness') and to what extent it resembles other types (compositional overlap). Many clay minerals are seen to be far from the ideal, and most minerals are also to a lesser (and sometimes greater) extent, close to types other than their own. This has provided a means of grading such minerals, evaluating how 'good' is a sample and defining the extent of transition to other phases. The methodology that has been derived here could provide a guideline for the analysis of other complex chemical systems especially in the fields of geology and metallurgy.