Spectroscopic study of andalusite originating from both autochtonous and eluvial deposits

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Analusite belongs to the group of minerals applicable to fabrication of ceramic materials. Utility of the minerals substrates comes from advantages like: low thermal expansion (the lowest in the group of syllimanite minerals), possibility to introduce the substrate to ceramic body like a raw material concentrate, relatively low price. From point of view refractories industry important effect is that heated andalusite undergo alteration to mullite (material with high refractoriness and good thermomechanical properties) and amorphous silica rich phase. The process of andalusite mullitisation was investigated by a lot of scientists and various experiments shows different temperature of phase transition (natural andalusite transform into mullite at 1200 – 1500 C). It were made an various attempts to explanation mentioned differences. We would like to enrich the discussion by heeding role of inclusions (dopants) accompanying with andalusite crystals. Our investigation were prepared on andalusite comes from two various deposits: South Africa (eluvial deposit) and France (autochnous deposit). Standard measurements in respect of quality requirements showed significant differences, for example various thermal expansion coefficient and different level of mullite concentration in final product after heat treatment. However typical XRD measurements on as received andalusite (all-in aggregate) showed practically the same phase composition. To clarify mentioned differences between minerals from both deposits we also used spectroscopic methods like ICP and XPS. Discussion of the attained results with using both methods is main topic of the presented poster.