

MaMaSELF

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Modification of Delamination Properties of Mica by new Synthesis Pathways

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Metal oxide-hydroxide coated mica is widely used for pearlescent vehicle pigments in industry. To produce a pigment with thinner layer, we need to prepare a better delaminating mica flake base. In our study, two kinds of mica and two series of synthetic mica samples between them are prepared by the simple one-step mixing, melting and crystallizing method. The sample A is with the composition which is used in industry now, the fluor phlogopite $\text{KMg}_3(\text{AlSi}_3\text{O}_{10})\text{F}_2$. And the sample B is found in the literature, a kind of sodium swelling mica with high-charge, its composition is $\text{NaMg}_3(\text{Al}_2\text{Si}_2\text{O}_{10})\text{F}_2$. Changing composition is based on sample A. In series C, different percentage of potassium in A is replaced by sodium to study the effect of sodium ions on delamination. And in series D, silicon is replaced by aluminum to study the effect of the different layer charge on mica's delamination. All the samples will be identified by X-ray or MAS-NMR. Their delamination properties will be studied with the help of a grinder and SEM. Each sample will be grinded under exactly the same conditions and by the same procedures, and we will compare the thickness before and after grinding under SEM.

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