

MICROSTRUCTURAL INVESTIGATION ON THE ROLE OF MODIFIERS IN THE STABILIZATION OF DIFFERENT POLYMORPHS OF SILICATE PHASES OF OPC CLINKER

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ABSTRACT

OPC clinker samples were prepared with selected modifiers that have been reported to have significant effect on the formation of clinker phases. The role of these additives in the development and modification of the clinker phases has been investigated using optical microscope, SEM-EDS, XRD techniques. Chemical separation techniques have been employed to understand the partitioning of the elements such as boron, manganese and chromium in presence of potassium in the silicate and non silicate fraction of the clinkers. The paper also evaluates the effect of these element on the microstructure in terms of phases assemblages, crystal size and morphology and polymorphism of silicate phases. The study indicates the effectiveness of the elements on alite formation can be graded in the order $Mn_2O_3 > Cr_2O_3 > K_2O \gg B_2O_3$ whereas boron addition substantially stabilizes the belite formation.