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Fabrication and preparation of Mg-reducing 12CaO•7Al2O3 cement for enhancing of electrical and optical properties

Polycrystalline Ca12Al14O33 (C12A7: O-) was synthesized by conventional solid state reaction method and was calcined/sintered at 1300°C. The Mg powder was used to reduce oxygen inside of nano-cage to form free electron in the cage for enhancing the electrical and optical properties of C12A7 cement compound. The crystal structure of the C12A7:O- and Mg-reducing C12A7 were characterized by X-ray diffraction, morphology and element composition were investigated with scanning electron microscope. In addition, Optical properties were measured by UV-VIS-NIR spectrophotometer that shown transition of absorption because the samples change from white to green powder. Finally, the sample was measured electrical conductivity and carrier concentration by the Hall Effect which can be confirmed existence of electron in the structure and the enhancing properties will be reported.
Keyword: Ca12Al14O33, Mg reducing agents

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