Sintesis dan sintering cordierite untuk dekomposisi NOx

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Abstrak

Reaksi thermal dari campuran kaolin dengan magnesium hidroksida dan kaolin dengan magnesium karbonat diamati untuk mendapatkan keramik cordierite tanpa penambahan zat aditif. Komposisi campuran ditentukan berdasarkan rumus molekul 2MgO.2Al2O3.5SiO2. Pembakaran campuran bahan-bahan pada perbandingan mol berdasarkan formula tersebut diharapkan dapat menghasilkan bentuk fasa amorf pada temperatur sekitar 900°C, yang merupakan temperatur dekomposisi. -Cordierite kemudian mengkristal pada temperatur sekitar 950°C, dan perlahan-lahan berubah menjadi keramik -cordierite. Campuran reaktan dipress menjadi benda uji dan dibakar untuk mendapatkan keramik -cordierite pada temperatur 1300 oC dan 1350°C. Keramik cordierite sebanyak 80,41 - 86,62 % dihasilkan dari campuran kaolin dengan magnesium karbonat dan metakaolin dengan magnesium karbonat pada temperatur pembakaran 1300 oC dan 1350 oC. Uji katalitik dilakukan terhadap cordierite untuk mendekomposisi gas NO, di mana 44,17 % NO terdekomposisi pada temperatur 400°C.

.....Thermal reaction of mixed kaolin with magnesium hydroxide and kaolin with magnesium carbonate were studied to produce cordierite ceramic without additives. Its composition was determined based on the molecular formula of 2MgO.2Al2O3.5SiO2. The firing of those mixed materials at mole ratios of this formula was expected to produce -cordierite at temperature of 900°C due to its thermal decomposition. The -Cordierite was then crystallized at temperature around 950°C, and was gradually transformed into -cordierite. This study was conducted by prssing the reactants mixtures as specimens which were then fired to obtain -cordierite ceramic at 1300°C and 1350°C. Cordierite of 80.41-86.62 % were resulted from the mixture of kaolin with magnesium carbonate and metakaolin with magnesium carbonate at the firing temperature of 1300 oC and 1350°C. The catalityc activity of cordierite was tested to decompose NO was tested, in which 44,17% NO could be decomposed at 400°C.