

ABSTRACT

One aspect of the present invention provides a method for preparing a ferrite metal oxide catalyst, comprising (a) preparing a precursor solution by dissolving a magnesium nitrate precursor and an iron nitrate precursor in a polar solvent, (b) forming a catalyst powder by spray-pyrolyzing the precursor solution into a reactor using a carrier gas, and (c) calcinating the catalyst powder in a reservoir after conveying the catalyst powder to the reservoir. The method may increase the activity and stability of a catalyst powder by additionally performing a step of calcinating the catalyst powder at a certain temperature for a certain period of time, and may increase the purity of the catalyst by reducing moisture and nitrate remaining in the catalyst. Also, when using the catalyst in an oxidative dehydrogenation of n-butene, the selectivity and purity of 1,3-butadiene may increase.