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(54) Title: MIXED METAL OXIDE CATALYSTS AND CATALYTIC CONVERSIONS OF LOWER ALKANE HYDROCARBONS

(57) Abstract: Catalytic compositions and processes are disclosed for economical conversions of lower alkane hydrocarbons. Broadly, the present invention discloses solid compositions containing mixed metal oxides that exhibit catalytic activity for ammoxidation of lower alkane hydrocarbons to produce an unsaturated nitrile in high yield. Generally, these solid oxide compositions comprise, as component elements, molybdenum (Mo), vanadium (V) niobium (Nb) and at least one active element selected from the group consisting of the elements having the ability to form positive ions. Mixed metal oxide catalytic compositions advantageously comprise one or more crystalline phases at least one of which phases has pre-determined unit cell volume and aspect ratio. Also described are methods for forming the improved catalysts having the desired crystalline structure and ammoxidation processes for conversion of lower alkanes.



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