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(54) Title: CATALYST FOR OXIDATION OF SATURATED AND UNSATURATED ALDEHYDES TO UNSATURATED CARBOXYLIC ACID COMPRISING A HETEROPOLY ACID, METHOD OF MAKING AND METHOD OF USING THERE-OF

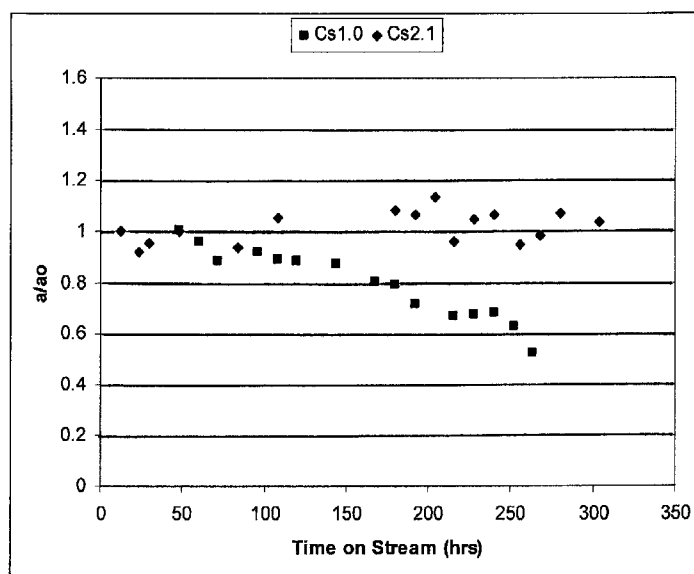


FIG. 6B

(57) Abstract: The invention is a heteropoly acid compound catalyst composition, a method of making the catalyst composition and a process for the oxidation of saturated and/or unsaturated aldehydes to unsaturated carboxylic acids using the catalyst composition. The catalyst composition is a heteropoly acid compound containing molybdenum, vanadium, phosphorus, cesium, bismuth, copper, and antimony. Thermal stability is achieved with higher cesium content (up to less than 3.0) but antimony, copper and bismuth must be present to maintain good activity. The catalyst is made by dissolving compounds of the components of each of the heteropoly acid compounds in a solution, precipitating the heteropoly acid compounds, obtaining a catalyst precursor, and calcining the catalyst precursor to form a heteropoly acid compound catalyst. Unsaturated aldehydes, such as methacrolein, may be oxidized in the presence of the heteropoly acid compound catalyst to produce an unsaturated carboxylic acid, such as methacrylic acid.

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