Preparation, characterization, and catalytic activity of multicomponent bismuth molybdate catalysts for oxidative dehydrogenation of n-butene to 1,3-butadiene

정지철, 김희수, 정영민[1], 김태진[1], 이성준[1], 오승훈[1], 김용승[1], 송인규[*]

서울대학교 화학생물공학부; [1](주) SK

(inksong@snu.ac.kr[*])

Bismuth molybdate catalysts have been widely investigated as efficient catalysts for oxidative dehydrogenation of n-butene to 1,3-butadiene. In petrochemical industries, in particular, multicomponent bismuth molybdate catalysts were employed for this reaction due to their high catalytic activity, even though reproducible preparation of catalyst is difficult owing to the complicated catalyst composition. Nevertheless, it is still not clear why the multicomponent bismuth molybdate catalysts are very active and selective compared to the pure bismuth molybdate. In this work, multicomponent bismuth molybdate catalysts with various metal components (Ni, Co, Fe, Ce, V, etc.) were prepared by a co-precipitation method, and they were applied to the oxidative dehydrogenation of n-butene to 1,3-butadiene in a continuous flow fixed-bed reactor. The prepared catalysts were characterized by XRD, ICP-AES, and BET measurements (The authors acknowledge the support from Korea Energy Management Corporation : 2005-01-0090-3-010).