

## Production of 1,3-butadiene from C<sub>4</sub> raffinate-3 through oxidative dehydrogenation of n-butene over bismuth molybdate catalysts

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A number of bismuth molybdate catalysts, including pure bismuth molybdates ( $\alpha$ -Bi<sub>2</sub>Mo<sub>3</sub>O<sub>12</sub>,  $\beta$ -Bi<sub>2</sub>Mo<sub>2</sub>O<sub>9</sub>, and  $\gamma$ -Bi<sub>2</sub>MoO<sub>6</sub>) and multicomponent bismuth molybdates, were prepared by a co-precipitation method for use in the production of 1,3-butadiene from C<sub>4</sub> raffinate-3 through oxidative dehydrogenation of n-butene. Various experimental tools such as TPRO, XPS, and O<sub>2</sub>-TPD measurements were carried out to determine the oxygen mobility of bismuth molybdate catalysts. It was revealed that oxygen mobility of bismuth molybdate catalyst played a key role in determining the catalytic performance in the oxidative dehydrogenation of n-butene to 1,3-butadiene (The authors would like to acknowledge funding from the SK Energy Corporation).