

### Effects of chiral modifier on heterogeneous enantioselective hydrogenation

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Enantioselective catalysis is in interest of pharmaceutical, agrochemical and fragrance industries due to the demands for the production of enantiopure compounds. Development of heterogeneous catalysts for enantioselective reactions has received great attention because of their prominent advantages such as high reusability and ease of separation. Here we report the effects of chiral modifiers including cinchonine (CN), cinchonidine (CD), quinine (QN) and quinidine (QD) on the enantioselective hydrogenation of ethyl pyruvate over Pt/SiO<sub>2</sub> catalysts. Catalytic hydrogenations were carried out at room temperature, varying H<sub>2</sub> pressure from 1 bar to 50 bar. Under 1 bar H<sub>2</sub> pressure, chirally modified Pt catalysts has higher reaction rate and enantioselectivity following the sequence: QN > QD, QN > CN. At 50 bar H<sub>2</sub> pressure, however, the efficiency of chiral modifiers is changed to CD > CN > QN > QD. These results imply that the interaction between chiral modifier and Pt surface plays a vital role in controlling the both reaction rate and enantioselectivity.