

論文 / 著書情報
Article / Book Information

題目(和文)	温和な条件下でのメタノール合成に向けた触媒探索
Title(English)	Search for Catalysts toward Methanol Synthesis at Mild conditions
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Methanol is an important chemical as a raw material for C1 chemistry, and is industrially synthesized under harsh conditions. From a viewpoint of energy saving, the development of catalysts workable under mild conditions is desirable.

In the first half of this thesis, requirements for efficient Cu-supported catalysts are described by using rare-earth hydride and Si-doped ZnO as support materials. To achieve efficient CO activation and hydrogenation with lower activation energy, support materials need to meet three requirements; (i) low work function, (ii) metallic nature, and (iii) supplying negatively charged hydrogen to CO.

In the second half, the finding of a novel Pd-Mo-based catalyst is described. This catalyst exhibits more than 15 times higher methanol synthesis rate compared with an industrial catalyst below 140 °C.