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Supporting Information

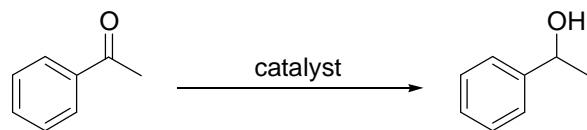
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# **Highly Dispersed Ruthenium Hydroxide Species Supported on Titanium Oxide Effective for Liquid-Phase Hydrogen-Transfer Reactions**

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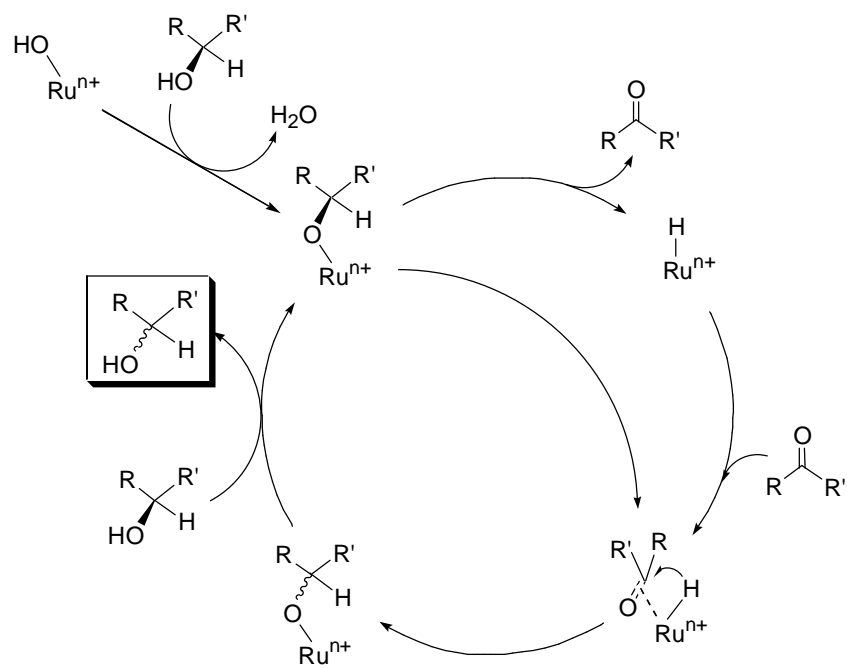
Table S1. Reduction of acetophenone using 2-propanol.<sup>[a]</sup>



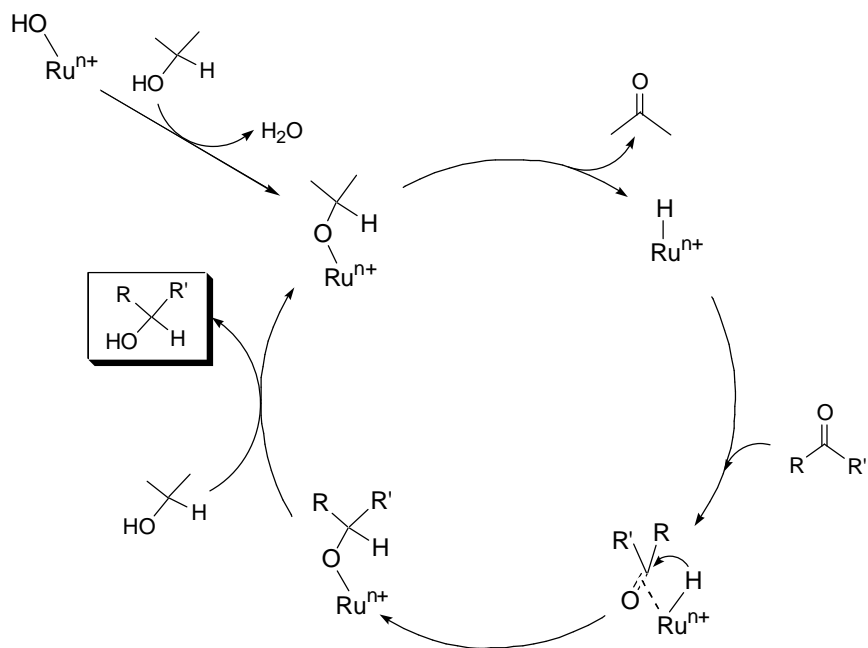
| Entry            | Catalyst  | Yield [%]   | TOF [h <sup>-1</sup> ] |
|------------------|---|-------------|------------------------|
| 1                | Ru(OH) <sub>x</sub> /TiO <sub>2</sub> (A)           | 51          | 118                    |
| 2                | Ru(OH) <sub>x</sub> /TiO <sub>2</sub> (B)           | 22          | 44                     |
| 3                | Ru(OH) <sub>x</sub> /TiO <sub>2</sub> (C)           | 2           | 6                      |
| 4                | Ru(OH) <sub>x</sub> /Al <sub>2</sub> O <sub>3</sub> | 6           | 13                     |
| 5                | Ru(OH) <sub>x</sub>                                 | no reaction |                        |
| 6 <sup>[b]</sup> | TiO <sub>2</sub> (A)                                | no reaction |                        |
| 7 <sup>[b]</sup> | Al <sub>2</sub> O <sub>3</sub>                      | no reaction |                        |
| 8                | none  | no reaction |                        |

[a] Reaction conditions: Acetophenone (1 mmol), catalyst (Ru: 1 mol%), 2-propanol (3 mL), 363 K, 0.5 h, under 1 atm of Ar. Yields were determined by GC analyses (DB-WAX column) using an internal standard technique. [b] 40 mg.

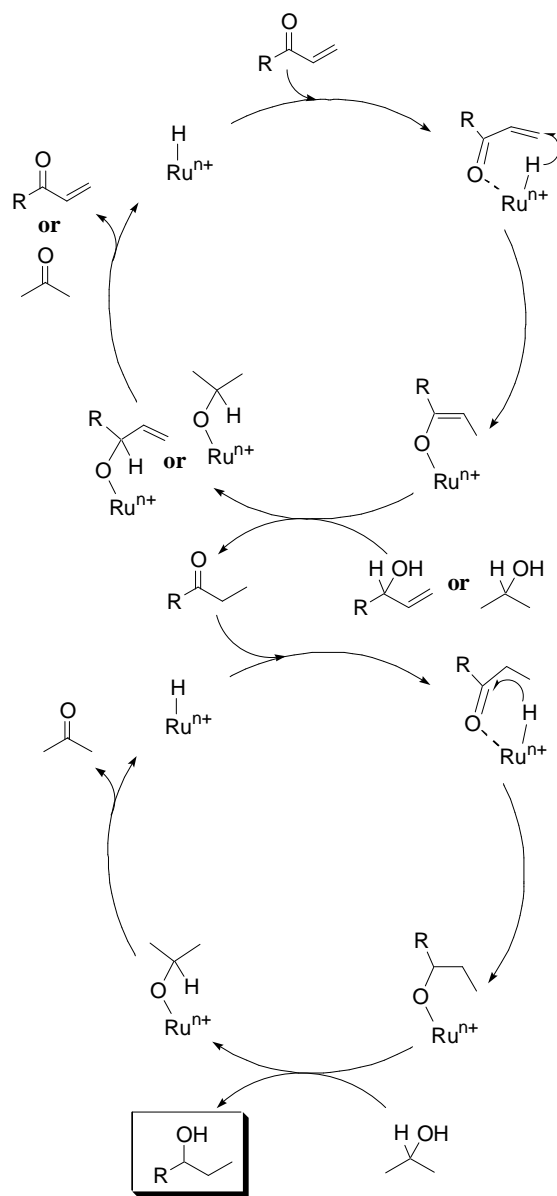
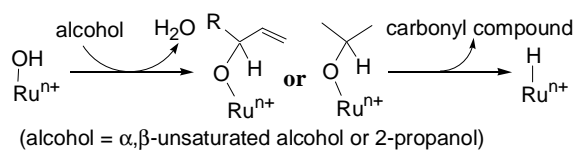




Scheme S2. A possible reaction mechanism for the racemization of chiral secondary alcohols.



Scheme S3. A possible reaction mechanism for the MPV-type reduction.



Scheme S4. A possible reaction mechanism for the reduction of allylic alcohols.