

Supporting Information

Long-term Hydrogen Production from a Methanol–Water Solution Catalyzed by an Iridium Complex

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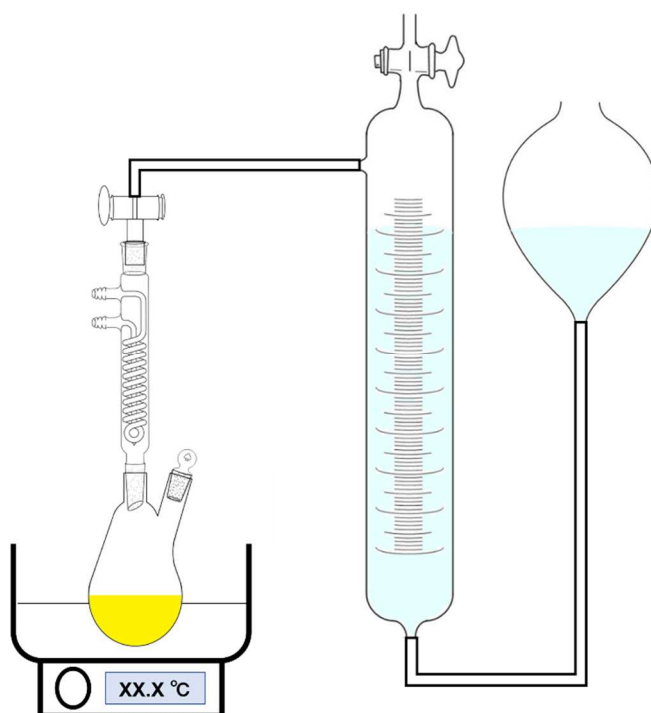


Figure S1. The reaction setup for the experiments performed in Table 1.

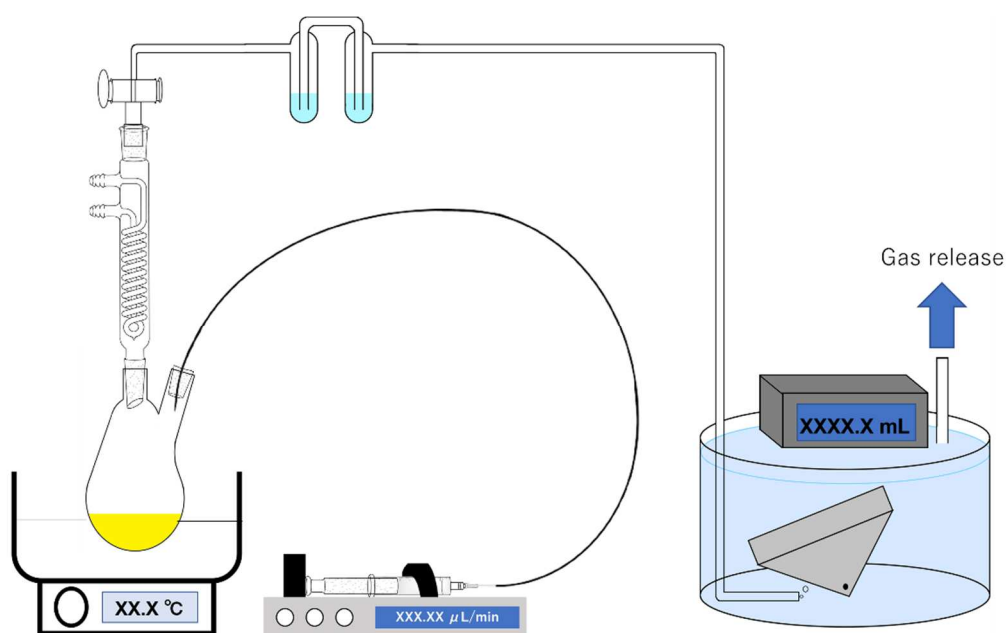


Figure S2. The reaction setup for the experiments performed in Table 2 and Figure 4

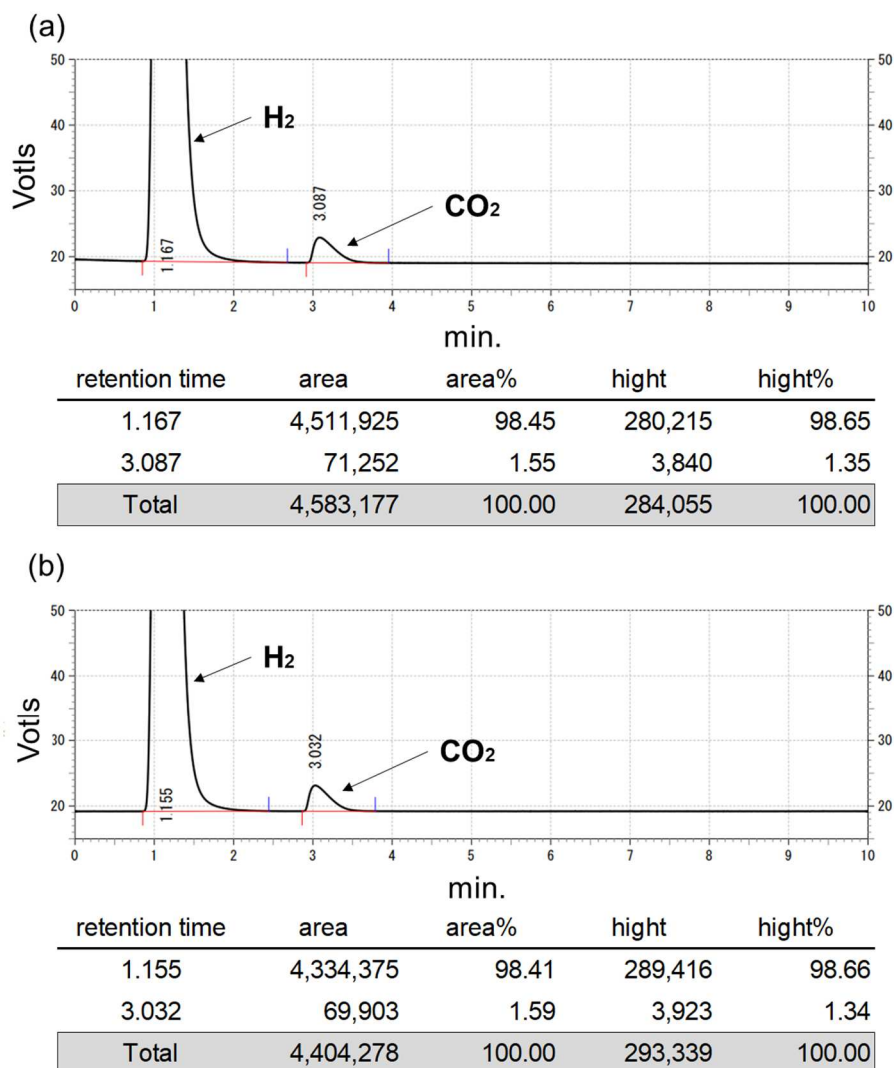


Figure S3. GC analysis of the evolved gas by the reaction of methanol and water under optimal conditions (a) The chromatogram of the evolved gas by the reaction catalyzed by the catalyst **2**. (b) The chromatogram of the standard hydrogen and carbon dioxide mixed gas ($H_2:CO_2 = 3:1$).

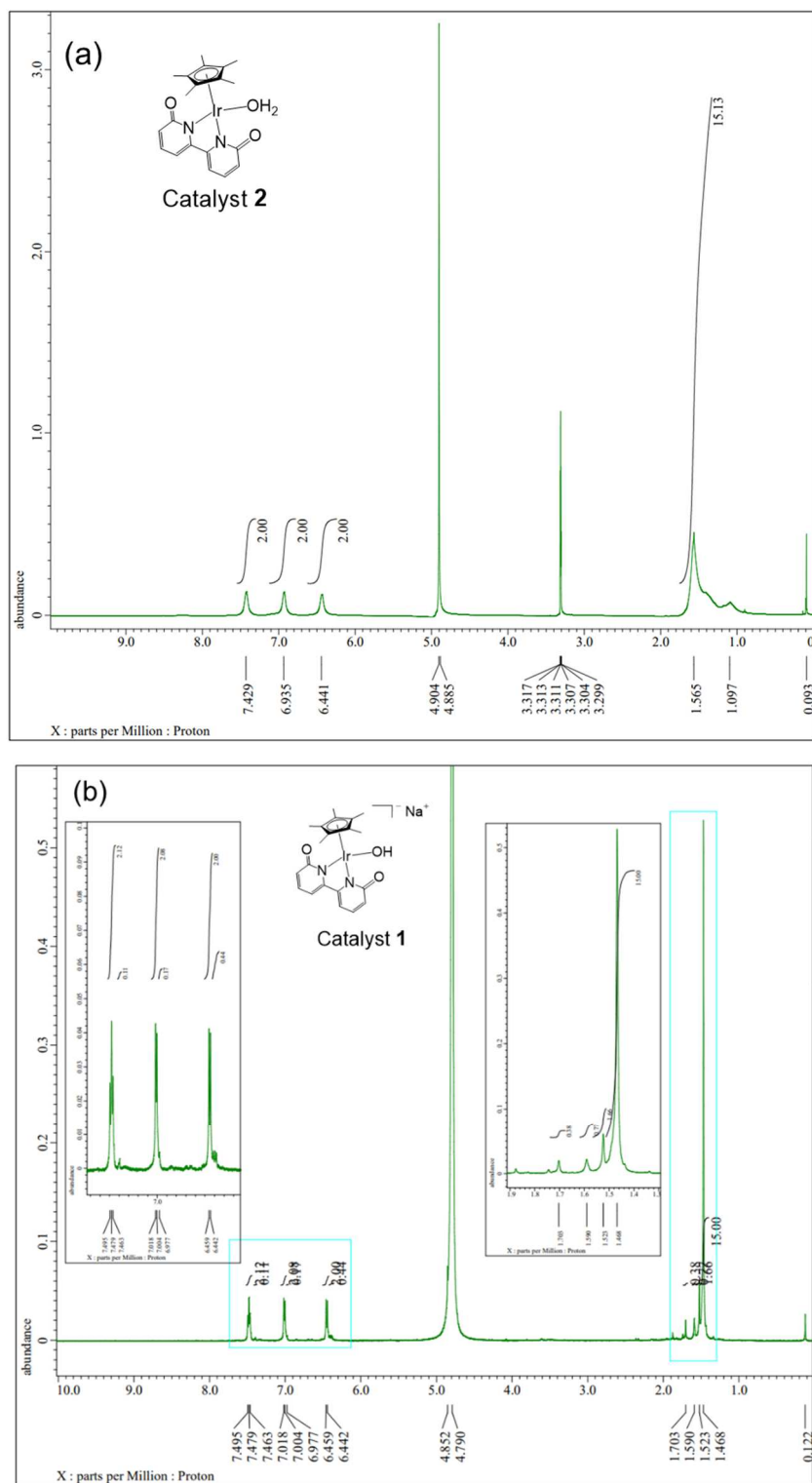
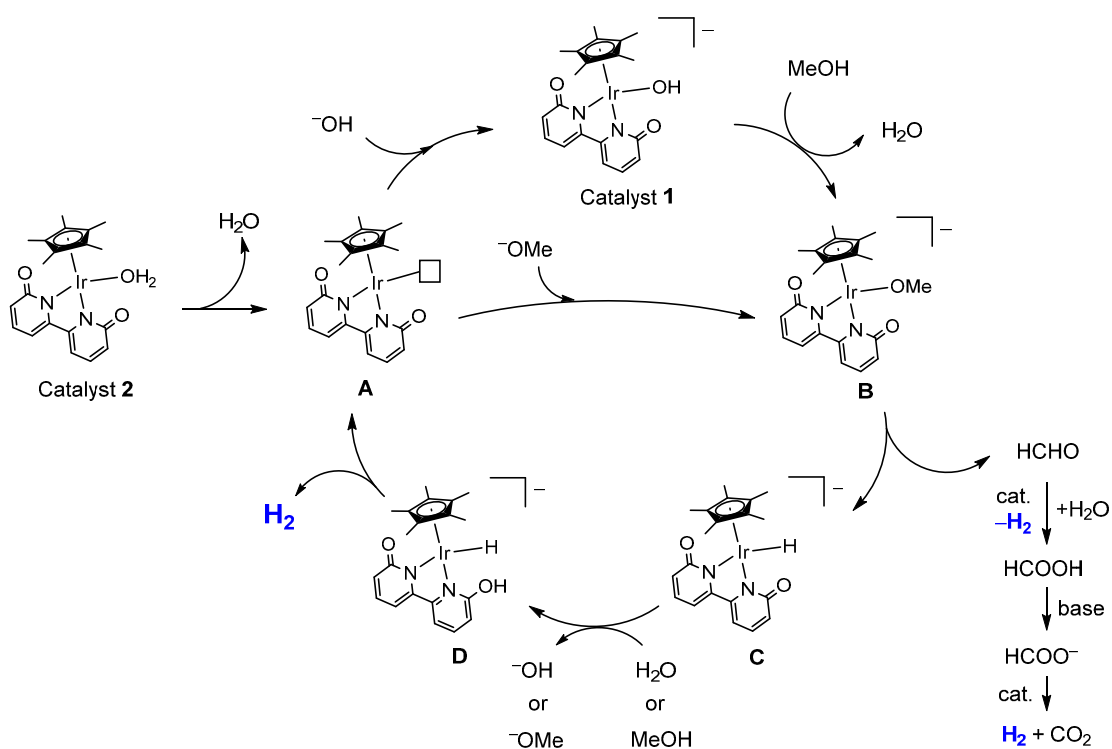


Figure S4. Results of the catalyst stability test at high temperature for a long period of time (a) ^1H NMR spectrum of catalyst **2** (measured in CD_3OD) after refluxing for 400 hours at 150°C in a water solvent [1]. (b) ^1H NMR spectrum of catalyst **1** (measured in D_2O) after refluxing for 400 hours at 150°C in a 0.067 M NaOH aqueous solution [2].



Scheme S1. Possible mechanism for the hydrogen production from a methanol-water solution [2]

References

- [1] R. Kawahara, K. Fujita, and R. Yamaguchi, *Angew. Chem. Int. Ed.*, **2012**, *51*, 12790.
- [2] K. Fujita, R. Kawahara, T. Aikawa, and R. Yamaguchi, *Angew. Chem. Int. Ed.*, **2015**, *54*, 9057.