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Highlights

- A novel room-temperature synthesis method for preparing MIL-100(Fe) was proposed.
- The use of oxidizing radicals promoted room-temperature synthesis of MIL-100(Fe)
- Room-temperature synthesis is more energy-saving compared to conventional methods
- Its C_3H_8 and C_2H_6 capacities reached 6.78 and 2.22mmol/g respectively at 298K.