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Supplementary Information

Ferric Hydrogensulfate Catalyzed Synthesis of Aryl 14*H*-Dibenzo[a,j]xanthene Derivatives under Thermal and Solvent-Free Conditions

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Preparation of ferric hydrogensulfate

A 50 mL suction flask was equipped with a dropping funnel. The gas outlet was connected to a vacuum system through an alkaline solution trap. Anhydrous ferric chloride (10 mmol) was charged into the flask and concentrated sulfuric acid 98% (30 mmol) was added dropwise over a period of 30 min at room temperature. HCl evolved immediately. After completion of the addition, the mixture was shaken for 30 min at 100 °C, while the residual HCl was eliminated by suction. Finally, a pale-brown solid $Fe(HSO_4)_3$ (3.41 g, 98 %) was obtained according to the previously reported procedure.[5, 6]

FT-IR spectrum of $Fe(HSO_4)_3$

The FT-IR spectrum of the catalyst was shown in figure 1. The catalyst is solid and solid state IR spectrum was recorded using the KBr disk technique. The spectrum shows a broad OH stretching absorption around 3500 and 3100 cm^{-1}. For sulfuric acid functional group in $Fe(HSO_4)_3$, the FT-IR absorption of the O=S=O stretching modes lies in 1140 cm^{-1}, and that of the S–O stretching mode lies in 600–700 cm^{-1}.

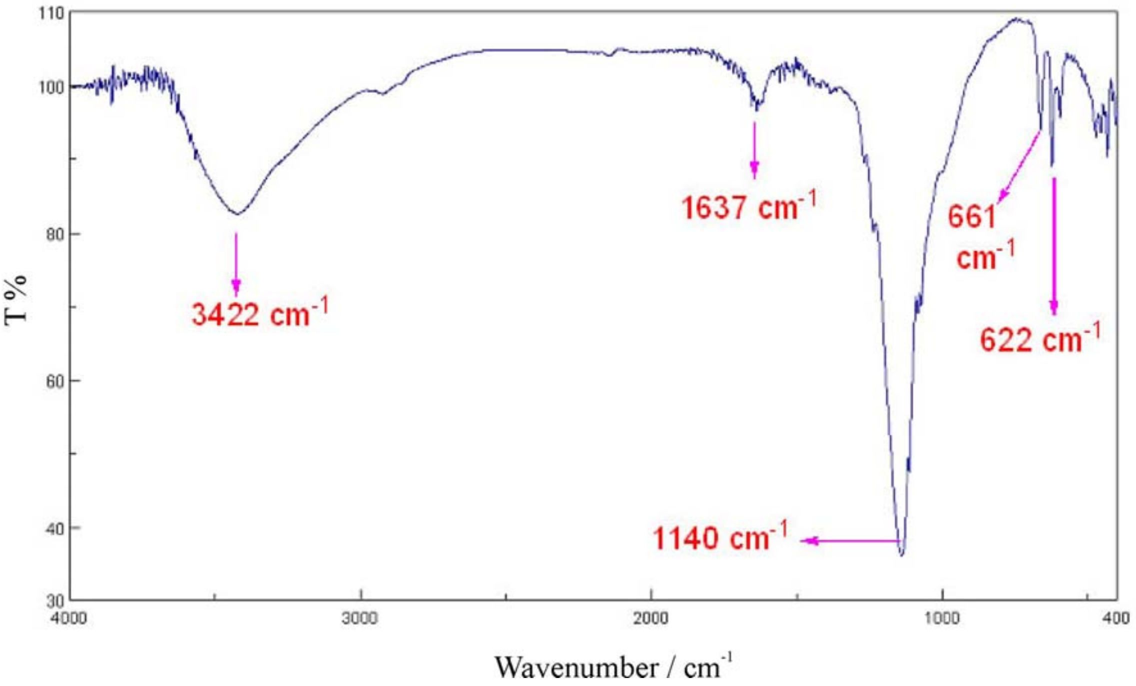

Figure 1. FT-IR spectrum of ferric hydrogensulfate

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