Electronic Supplementary Material (ESI) for Chemical Communications.

Magnetic Graphitic Carbon Nitride:Application in C-H Activation of Amines

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Supplementary Information

Contents

General procedure for the synthesis of Fe@g-C_3N_4

The graphitic carbon nitride (g-C_3N_4) was synthesized by calcination of urea (10 g) in ambient atmosphere at 500 °C for 2 h. The highly porous graphitic material (1g) was dispersed in a 10% solution of polyethylene glycol (PEG-400) in water by sonication. The solid $FeSO_4.7H_2O$ (500 mg) was added to this solution and the stirring continued for 8 hours; The excess of sodium borohydride ($NaBH_4$) was finally added to reduce the iron sulfate to magnetic ferrites and the stirring was continued for another 8 hours (Scheme 1). The ensuing material, magnetic ferrites nanoparticles deposited on layers of graphitic carbon nitride, was then separated using an external magnet, washed with water followed by methanol and dried under vacuum at 50 °C. Catalyst characterization by SEM, transmission electron microscopy (TEM), EDX, X-ray diffraction (XRD) and XPS analysis.

General procedure for the α-cyanation of amines *via* C-H activation

In 25 mL RBF the amine (1mmol), NaCN (1.1 mmol) and catalyst Fe@g-C3N4 (10 mg) was added in 50% acetic acid (2 mL of water + 2 mL acetic acid). To this reaction mixture 30% of H_2O_2 (1 mmol) was added and the reaction was monitored by TLC. After the completion of reaction catalyst was separated using external magnet and product was isolated using ethyl acetate extraction and purified using column chromatography and characterized.

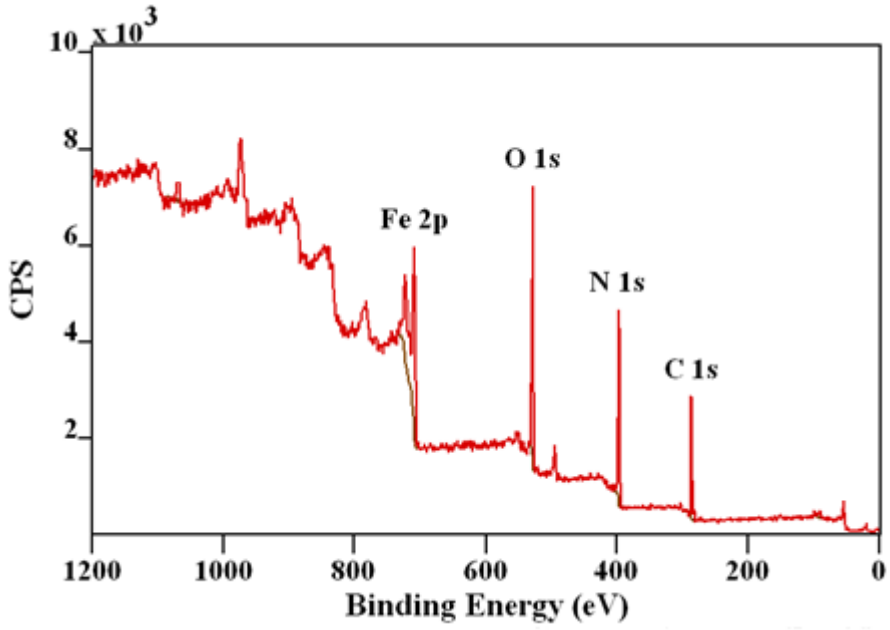


Figure S1a: XPS analysis of Fe@g-C_3N_4

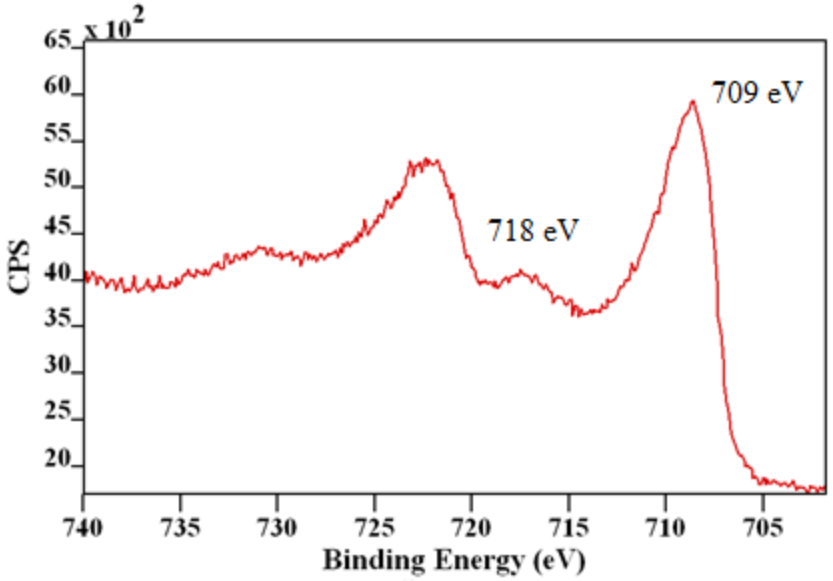


Figure S1b: XPS analysis of Fe@g-C_3N_4

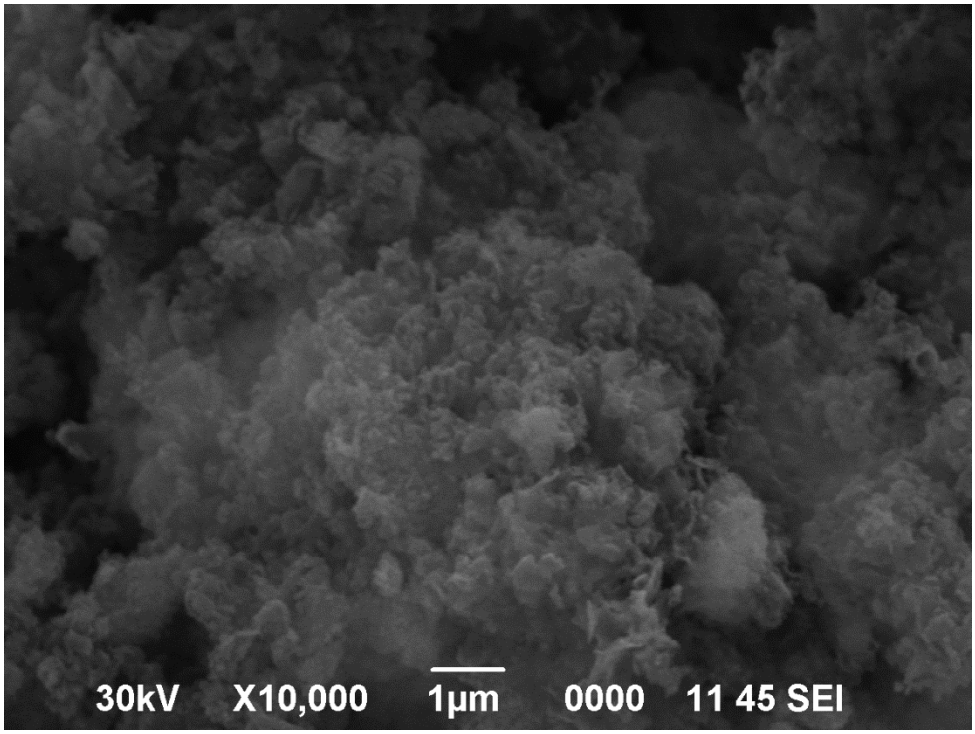


Figure S2: SEM spectra of recycled Fe@g-C_3N_4

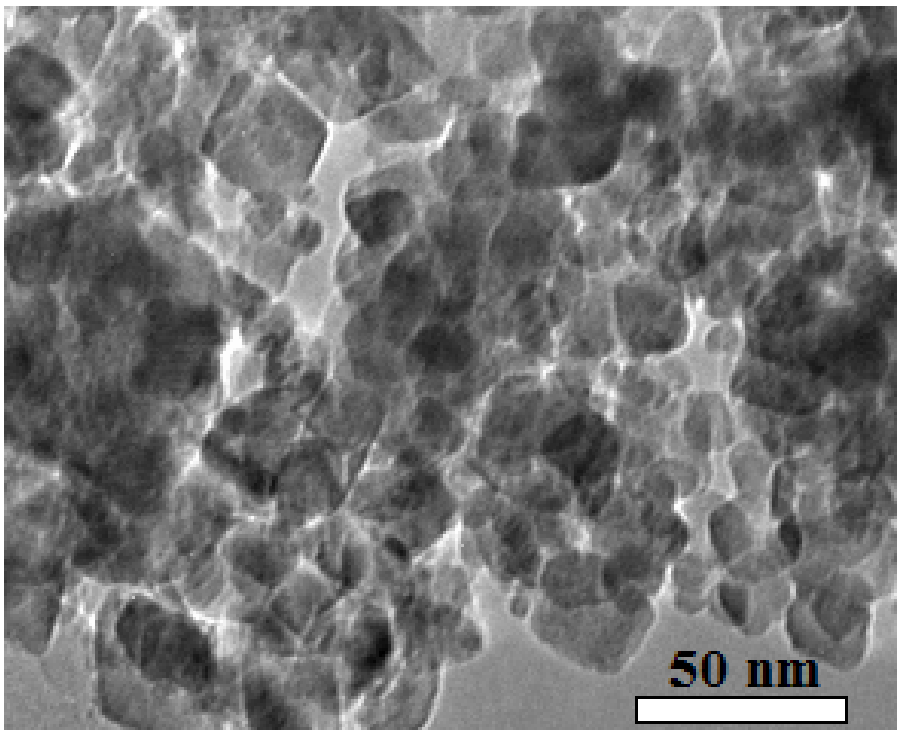
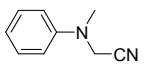


Figure S3: TEM spectra of recycled Fe@g-C_3N_4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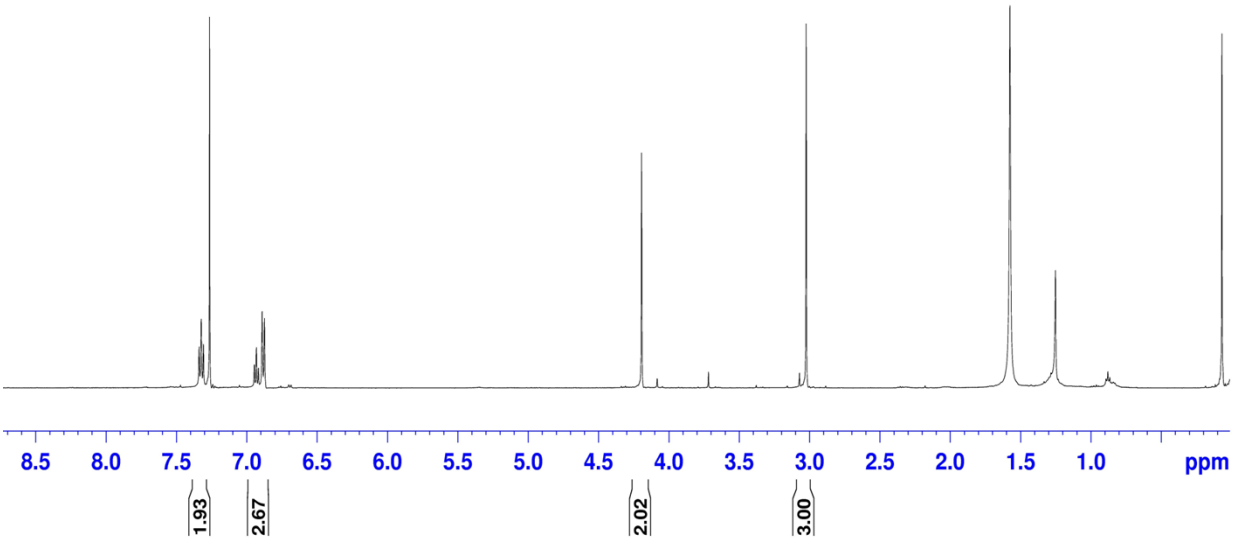
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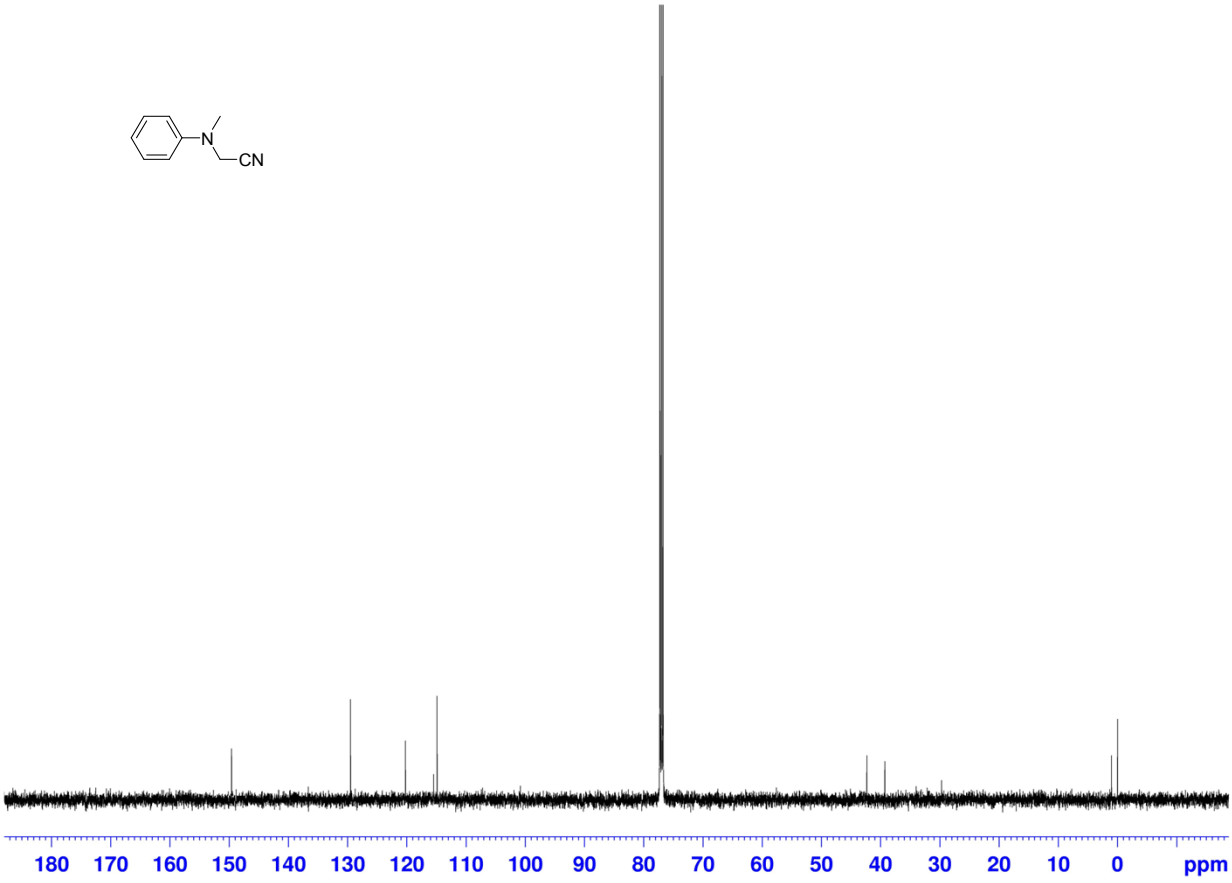
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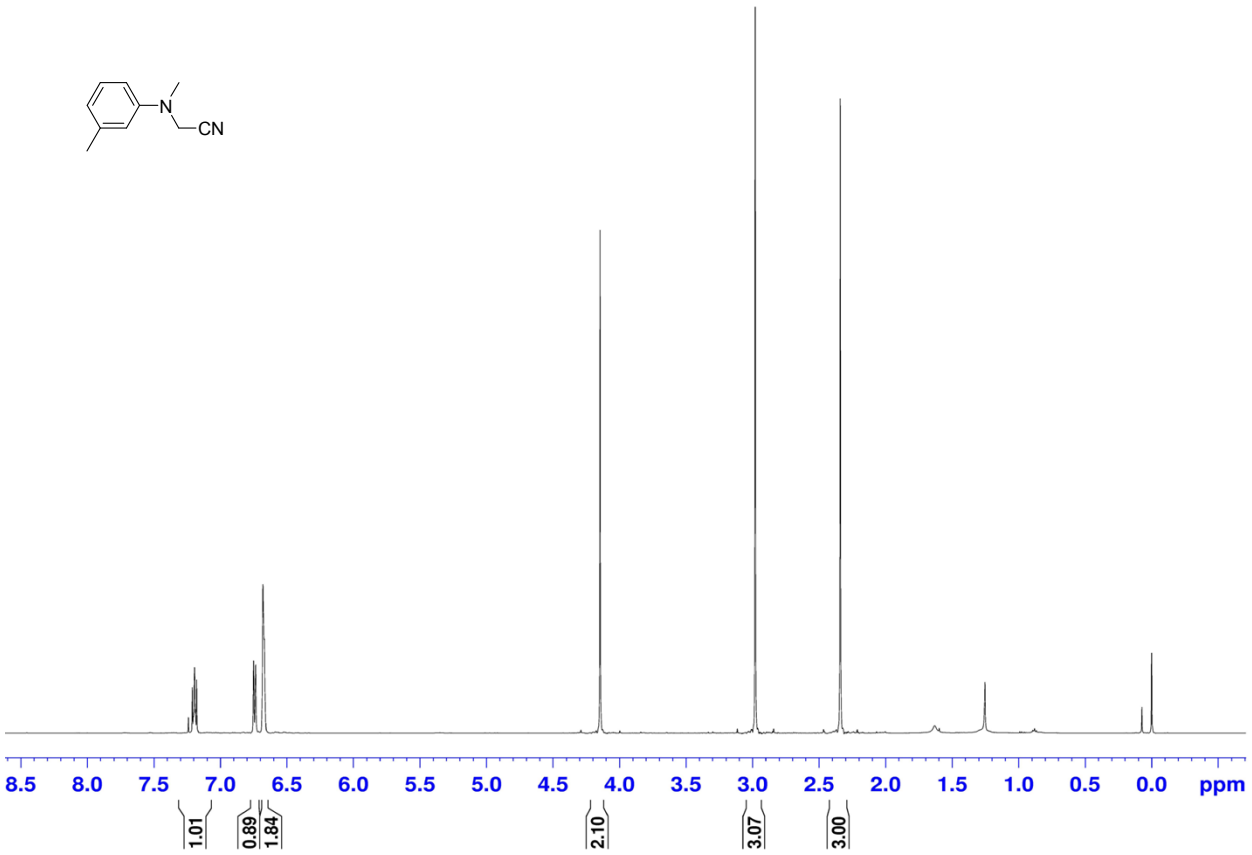
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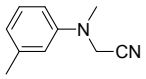
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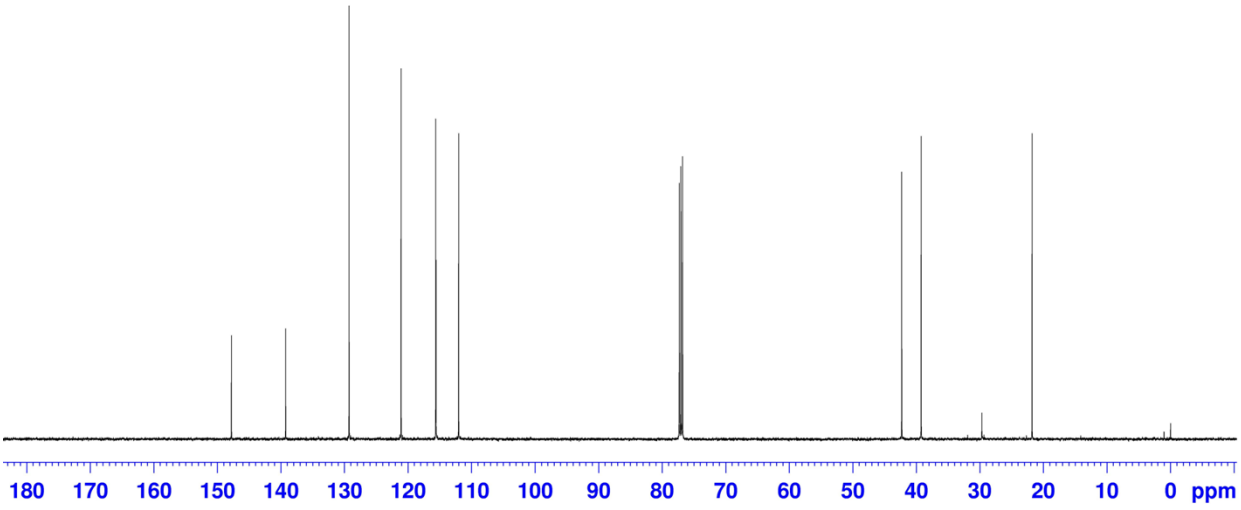
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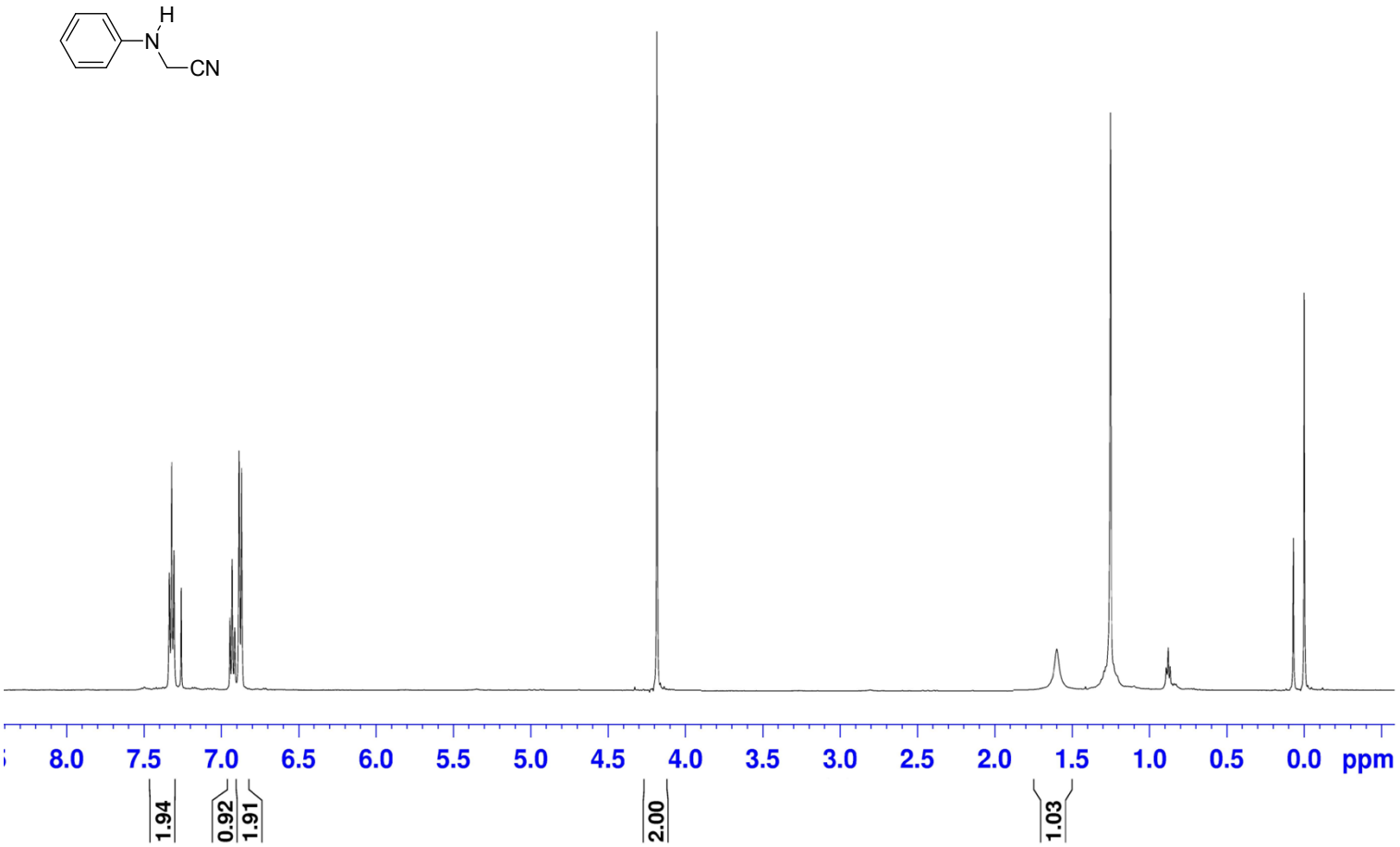
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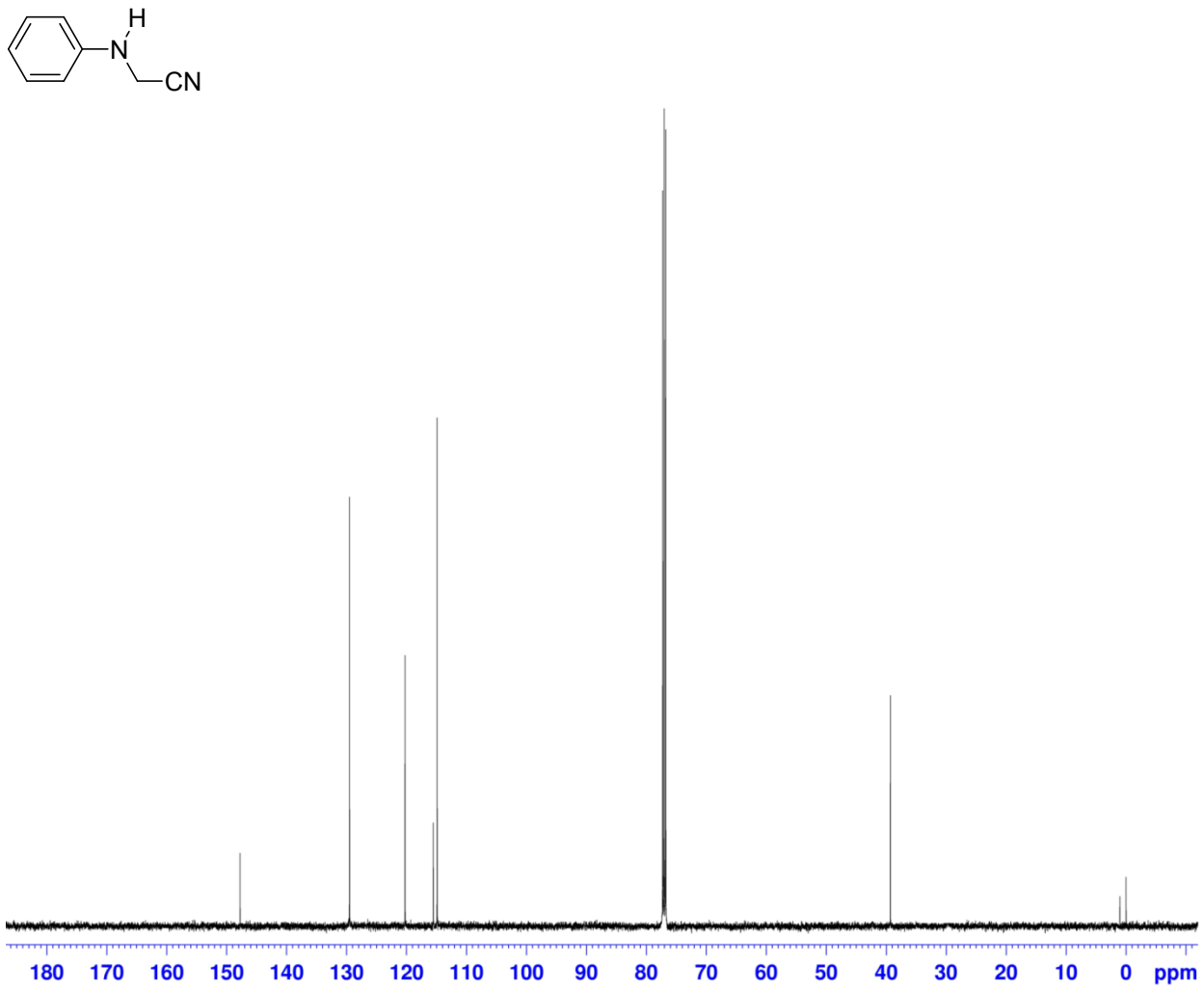
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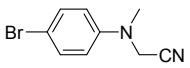
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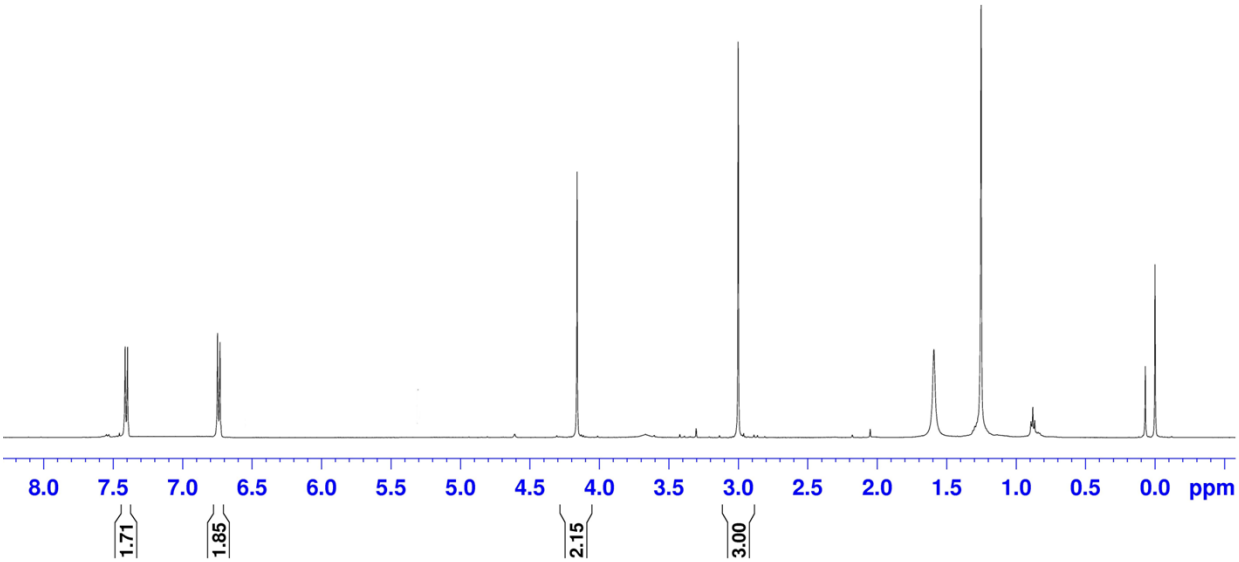
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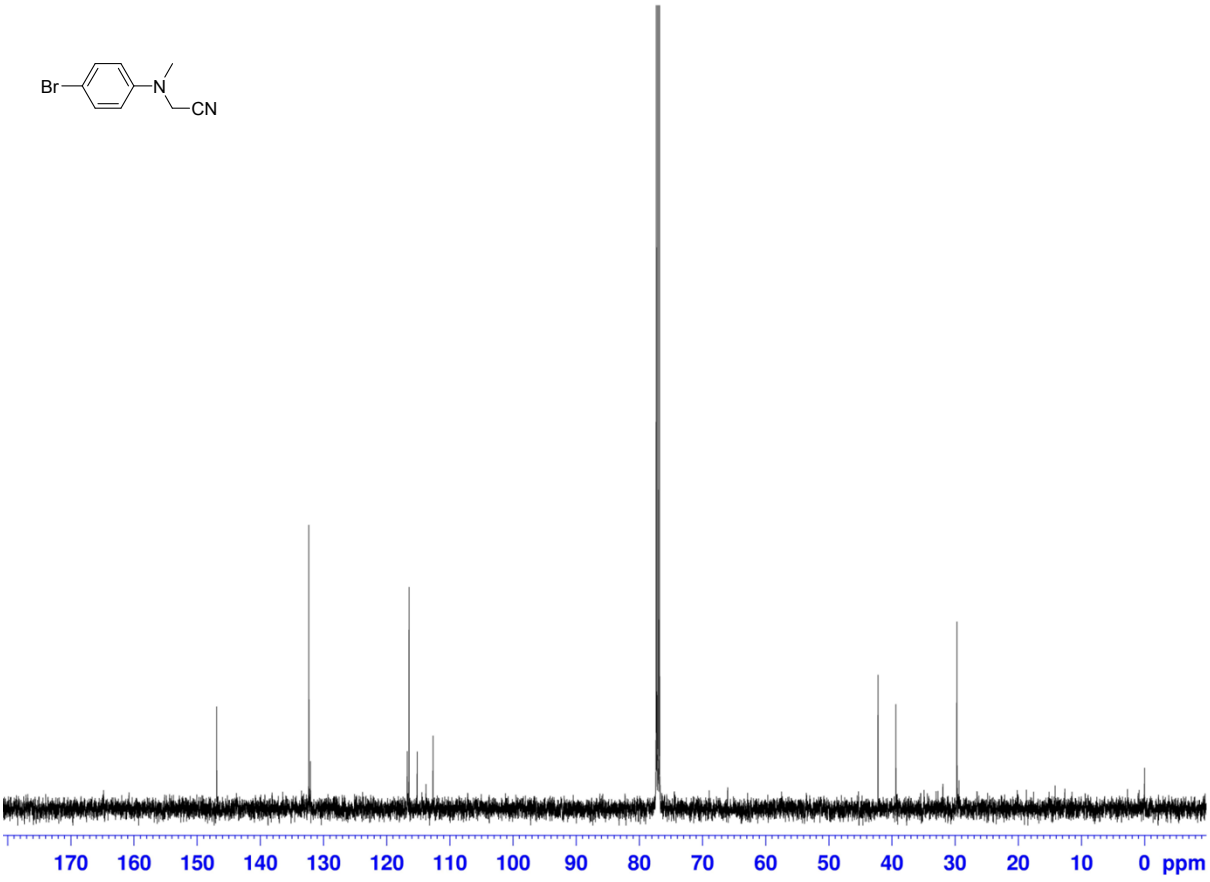
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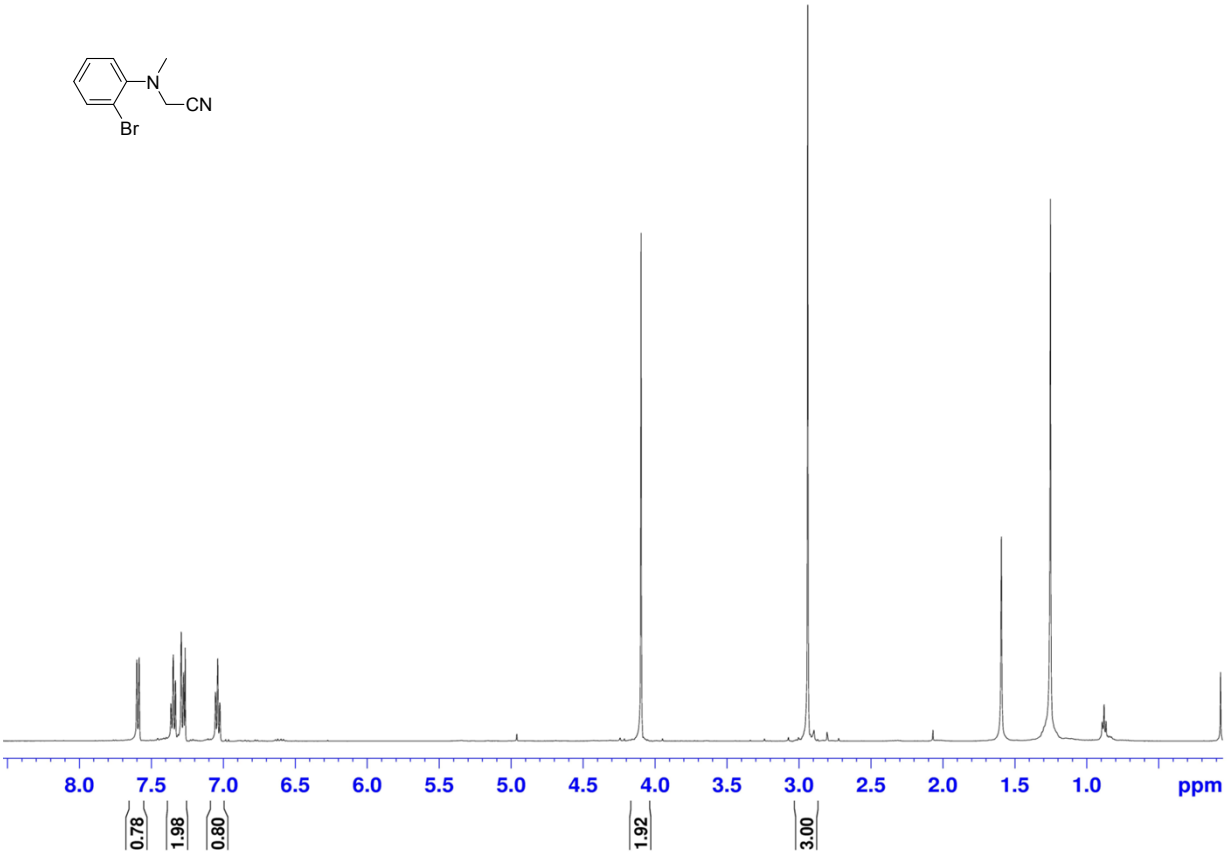
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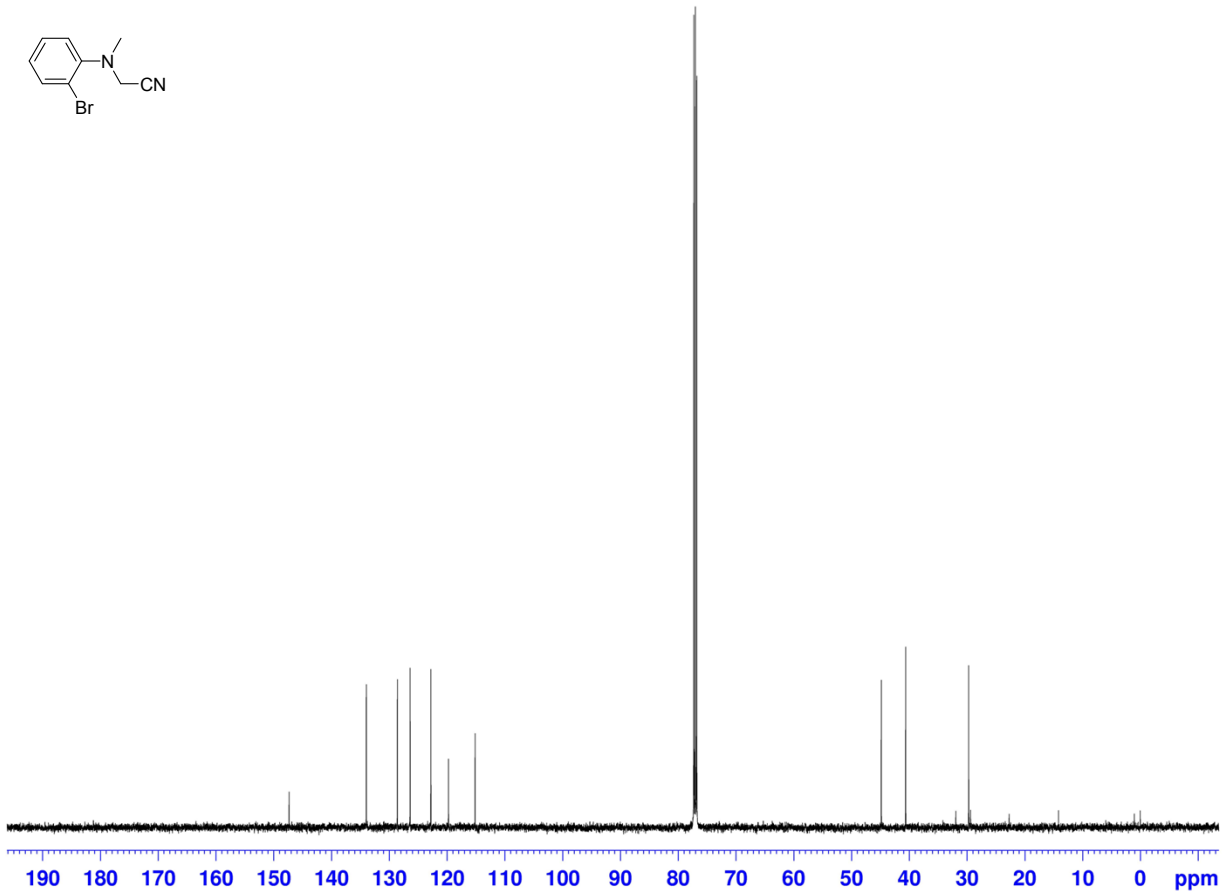
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