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## A new synthesis of carbon encapsulated Fe<sub>5</sub>C<sub>2</sub> nanoparticles for high-temperature Fischer–Tropsch synthesis†

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Using a simple thermal treatment under a CO flow, uniform micrometer-sized iron oxalate dihydrate cubes prepared by hydrothermal reaction were transformed into Fe<sub>5</sub>C<sub>2</sub>@C nanoparticles to form a mesoporous framework; the final structure was successfully applied to the high-temperature Fischer–Tropsch reaction and it showed high activity (CO conversion = 96%, FTY = 1.5 × 10<sup>-4</sup> mol<sub>CO</sub> g<sub>Fe</sub><sup>-1</sup> s<sup>-1</sup>) and stability.