

Supplementary Information

Efficient anchoring CuO nanoparticles on Ugi four-component-functionalized graphene quantum dots: Colloidal soluble nanoplatform with great photoluminescent and antibacterial properties

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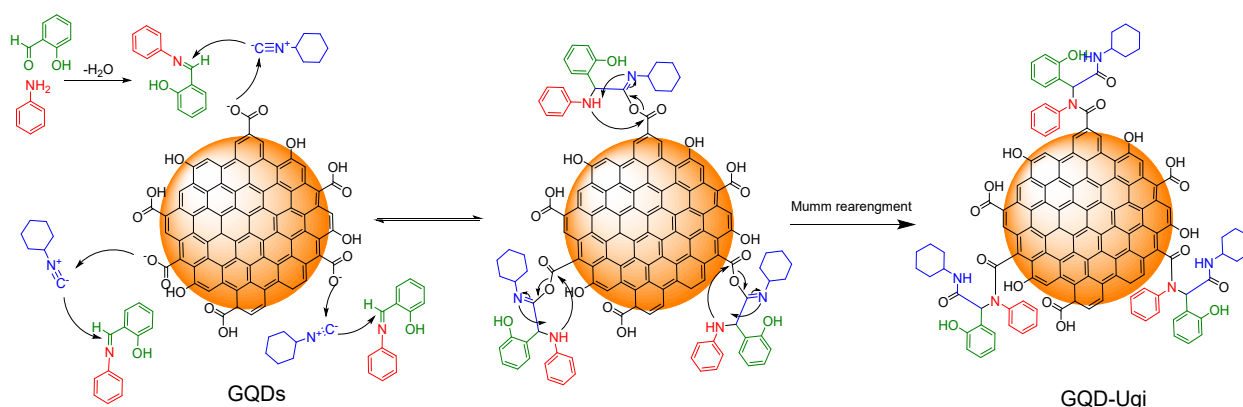


Figure S1. Proposed mechanism for the carboxamide functionalization of GQDs *via* the Ugi-4CR.

CuO nanoparticles synthesis

CuO nanoparticles were synthesized through the direct thermal decomposition process according to the previous work.¹ Typically, the precursor material was prepared by adding 530 mg (5.0 mmol) of Na₂CO₃ into 10 mL of 0.5 M CuSO₄ solution and sonicate at 60 °C using an ultrasonic bath (Backer vCLEAN1-L6 Ultrasonic). The green precipitate, Cu₄(SO₄)(OH)₆, was collected and washed three times with warm distilled water to remove possible remaining ions and

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dried at 70 °C for 8 h. Finally, resultant precursor was treated in a pre-heated muffle furnace at 600 °C. After 2 h, the brownish black product, CuO nanoparticles, was collected.

Reference

1. D. Das, B. C. Nath, P. Phukon and S. K. Dolui, *Colloids and Surfaces B: Biointerfaces*, 2013, **101**, 430-433.