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Carbon dots as new eco-friendly and effective corrosion inhibitor

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ABSTRACT: Inspired by the high water solubility and low cytotoxicity of N doped carbon dots (CDs) prepared by using antibiotic aminosalicylic acid (ASA) as precursor, we anticipate that these CDs may possess an excellent protective ability to inhibit the corrosion of carbon steel in aggressive solutions owing to its special structure. Therefore, the investigation on the inhibiting effect of CDs as eco-friendly corrosion inhibitor for Q235 carbon steel corrosion in 1 M HCl solution is first reported. Electrochemical techniques, weight loss, morphological and elements characterization are combined to investigate the inhibiting effect and corrosion mechanism. The results show that corrosion of Q235 carbon steel in 1 M HCl solution is significantly inhibited by the addition of CDs, which is attributed to the formation of CDs adsorption film, and the adsorption of CDs obeys a Langmuir adsorption isotherm. *

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