



## Synthesis, characterization and study of methyl 3-(2-oxo-2H-1,4-benzoxazin-3-yl) propanoate as new corrosion inhibitor for carbon steel in 1M H<sub>2</sub>SO<sub>4</sub> solution

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**Abstract** A new benzoxazin derivative, namely methyl 3-(2-oxo-2H-1,4-benzoxazin-3-yl) propanoate (1,4-MBXP), was synthesized under mild conditions from 2-aminophenols and dimethyl-2-oxoglutarate. The prepared compound was identified by FT-IR, <sup>1</sup>H NMR, <sup>13</sup>C NMR spectroscopies, elementary analysis and MS. Its inhibitive action against the corrosion of carbon steel in 1M H<sub>2</sub>SO<sub>4</sub> solution was investigated by weight-loss and hydrogen evolution measurements. 1,4-MBXP is a good corrosion inhibitor and its inhibition efficiency increases with the increase of concentration to attain 75.08 % at 180 ppm. The temperature effect on the corrosion behaviour of carbon steel in 1M H<sub>2</sub>SO<sub>4</sub> with and without the inhibitor at 180 ppm was studied in the temperature range from 298 to 338 K. The synergistic action caused by iodide ions on the corrosion inhibition of carbon steel in 1M H<sub>2</sub>SO<sub>4</sub> by 1,4-MBXP at 180 ppm was studied using weight methods at 298 K. The inhibition efficiency synergistically increased on addition of potassium iodide.

**Keywords** Corrosion inhibition · 1,4-benzoxazin · Carbon steel · Weight-loss · Adsorption · Sulfuric acid

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