Chapter 3

AIM AND SCOPE OF THE WORK
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The corrosion of metals is a worldwide scientific problem as it affects the metallurgical, chemical and oil industries. These corrosion inhibitors are used in industry to reduce the corrosion rate of metals which are in contact with aggressive media. Many organic compounds were studied to investigate their anticorrosion property. But, unfortunately synthesis of these compounds are very expensive, toxic and hazardous for human beings and environment.

The environmental toxicity of organic corrosion inhibitors has prompted the search for green corrosion inhibitors. Green corrosion inhibitors are biodegradable and do not contain heavy metals or other toxic compounds.

The overall aim and scope of the present study was to carry out investigation on the dissolution of mild steel in acidic solution.

Bearing the aforecited aspects in mind, the scope of this present investigation included the following:

1. To investigate the dissolution of mild steel in 2M H$_2$SO$_4$ and 2M HCl solutions and to evaluate the inhibiting effect of *Mentha spicata* plant extract on mild steel at different temperature by weight loss method and thermometric method.

2. To characterise the phytochemical constituents present in *Mentha spicata* plant extract by
   - UV-VIS spectroscopy,
   - FTIR spectroscopy
   - GC/MS analysis

3. To study various factors that affect the inhibition efficiency. These factors are:
   - Effect of inhibitor concentration in acidic medium
   - Effect of Temperature

4. To investigate the Free energy and adsorption mechanism of green inhibitor on the metal surface.

5. To analyze the surface morphology of mild steel in the absence and presence of investigated inhibitors in both acidic medium.

6. To carry out quantum chemical calculation using Gaussian09 software.