The formation of SnO_2 nanoparticles was monitored with the help of UV–visible spectroscopy. The absorbance of the reaction was recorded from 200 to 800 nm. This shows the clear Surface Plasmon Resonance (SPR) with the absorbance at the peak range of 224 nm (Fig. 1). Also the SPR value was compared with the literature [2-3], it clearly confirms the formation of SnO_2 nanoparticles. For semiconducting materials (SnO_2 NPs), the quantum confinement effect is expected, and the absorption edge will be shifted to higher energy when the particle size decreases. The value of absorption edge sample is 224 nm.

The SnO_2 NPs were synthesized using thanol (EtOH)/water extract without introducing toxic elements to the environment and also it said to be one of the cheapest methods for synthesis of nanoparticles. Further various environmental applications such as dye degradation were proved.

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THE ELECTROCHEMICAL BEHAVIOUR OF ENVIRONMENT-FRIENDLY INHIBITORS IN CORROSION CONTROL OF CARBON STEEL IN NEUTRAL SOLUTION

Recently, the development of green corrosion inhibitors and green inhibition strategies are highly demanded because of the increasing demand of

green chemistry in the area of science and technology. In last few decades, use of plant extracts as metallic corrosion inhibitors has attracted significantly attention. Plant materials are ideal green candidatures to replace traditional toxic corrosion inhibitors. Reduced environmental risk, lower cost, wide spread availability and high corrosion inhibition effectiveness make the plant extracts as suitable candidates to replace the expensive and toxic traditional synthetic corrosion inhibitors. The abundant chemical constituents, such as flavonoids, polyphenols, and polysaccharide, endow plant extract with the potential of inhibiting the corrosion process of mild steel. So, it is an interesting and useful task to find new sources for highlighting anticorrosive active compounds and to obtain organic compounds for their further use as inhibitor of steel corrosion in various aggressive media [1].

In the present work, ethanol apricot pomace extract (APE), which was extracted and tested to control the corrosion of mild steel in different operating condition. The inhibiting action of ACE on corrosion of steel in 0.5 M NaCl solution was investigated via potentiodynamic polarization method. Weight loss measurements were used to measure the corrosion rate in the absence and presence of inhibitor. The linear polarization technique (LPR) was applied to study time variation of the corrosion rate. Polarization resistance values Rp for each probe were measured automatically every 15 min in a galvanostatic mode. Rp was determined as a quotient of the potential response to the applied current. The density of polarizing current was i = 5 $\mu A/cm^2$. Fourier transform infrared spectroscopy (FTIR) and scanning electron microscopy (SEM) were employed to characterize the extract and the surface morphology of steel, respectively. GC-MS analysis of the EtOH extract of apricot pomace indicates the presence of 40 phytochemical compounds. All of them are known compounds and are easily identified by mass spectrum and linear retention indices.The main components are aldehydes: hexanal (1.32%), (E)-2-hexanal (3.10%),(Z)-2-heptenal (3.65%),heptanal (2.18%), 2-phenylacetaaldehyde (1.29%), β-cyclocitral (5.17%), (E,E)-2,4-decadienal (3.65%),also ketones: 2-hexanone (1.03%), 3-hexanone(0.54%). The class of alcohols is presented by (Z)-3-hexenol (0.76%), (E)-2-hexenol (1.87%), hexanol (5.67%). In a minor amount, the extract contains esters, such as (E)-2-hexenyl acetate (2.78%), (Z)-3-hexenyl butanoate (1.51 %), hexyl hexanoate (2.12 %)From this analysis it is found that corrosion inhibitionis mainly due to the presence of organic compounds present in the apricot pomace. The results clearly show that corrosion rate was reduced in the presence of the extract in comparison to the blank without inhibitor.

The immersion time is an important parameter in assessing the stability of corrosion inhibitive properties of organic compounds. In this way, linear polarization technique useful technique for long time tests, because it

does not significantly disturbed the inhibitor–metal system and it is possible to follow it over time. The experiments were performed after different immersion times (1-96 h) at the highest concentration of APE (100 mg/L) in 0.5 M NaCl solution. The formation process of protective layer can be classified into two steps, namely fast adsorption (2-18 h) as the first step and then a slow chemical transformation the molecules that were adsorbed on the steel surface (20-48 h). With increase in immersion time, the film becomes denser and more stable. Corrosion protection efficiency increased with extract concentration but decreased slightly over prolonged exposure time. The increase in inhibitor efficiency may result from the fact that adsorption and surface coverage increases with the increase in concentration. As concentration increases, more inhibitor molecules are adsorbed on the metal surface resulting in larger surface coverage.

Potentiodynamic polarization curves indicate that the APE extract acts as a mixed - type inhibitor. Surface analysis techniques (SEM) also confirm the adsorption of the components of the extract on the mild steel surface. From weight loss and electrochemical studies, it has been found that the ACE acted as a good corrosion inhibitor for mild steel in 0.5 M NaCl solution.

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PHENOL ADSOPTION WITH CARBON COMPOSITES

Phenols are one of the most common pollutants entering the surface water with runoff from enterprises. Resetting phenolic water in reservoirs and drains sharply worsens their overall sanitary state and affects living organisms not only with its toxicity, but also with nutrients and dissolved gases (oxygen, carbon dioxide, etc.).

The process of self-cleaning of reservoirs from phenol proceeds relatively slowly and its traces can be carried by the flow of the river over long distances, so the phenol-containing wastewater should be cleaned before dumping.