Thiazolidinone derivatives are important compounds in industry because of their applications such as analytical reagents, potent electron releasing layer in solar cell, fragrance in cosmetics. They are also gaining much of interest in medicinal and biological chemistry due to their pharmacological properties such as antibacterial, antifungal, anticonvulsant, anticancer, antileukaemic, antimicrobial and anti-HIV activities[1]. Synthetic combinatorial libraries made up of hundreds to millions of small organic molecules have been successfully developed and used to discover new antimicrobial leads. Because of this, it is very important to determine adsorption and surface properties of these materials.

In this study, thiazolidin-4-ones bearing heteroaryl substituents at 2- and 3-positions were freshly synthesized[2] via one-pot three component condensation reaction and their structures were clarified with analytical tools like melting point, UV-Vis, FT-IR, 1H-NMR, 13C-NMR and mass spectroscopy. The retentions of nonpolar solvents such as n-hexane, n-heptane, n-octane, n-nonane, n-decane and other acidic, basic and amphoteric probes such as tetrahydrofuran, dichloromethane, chloroform, acetone and ethyl acetate used without further purification on 3-(6-Methyl-2-pyridyl)-2-(2-thienyl)-1,3-thiazolidin-4-one and 3-(6-Methyl-2-pyridyl)-2-(3-methyl-2-thienyl)-1,3-thiazolidin-4-one were measured in the temperature ranges from 313 to 333 K by inverse gas chromatography (IGC). The dispersive component of the surface energy, $\gamma^D_S$ of studied adsorbent surface was estimated using retention times of different nonpolar organics in the infinite dilution region. Thermodynamic parameters of adsorption (free energy, $\Delta G^A_S$, enthalpy, $\Delta H^A_S$ and entropy, $\Delta S^A_S$), dispersive components of the surface energies, $\gamma^D_S$ and the acid, $K_A$ and base, $K_D$ constants for the 3-(6-Methyl-2-pyridyl)-2-(2-thienyl)-1,3-thiazolidin-4-one and 3-(6-Methyl-2-pyridyl)-2-(3-methyl-2-thienyl)-1,3-thiazolidin-4-one were calculated. The obtained results proved that IGC is an efficient and successful technique for the characterization of adsorption properties and acid-base quantity of these kinds of materials.

REFERENCES