



## R. Sanjeeva<sup>1</sup>, V. Jagannadhamb<sup>2</sup>

<sup>1</sup>Geethanjali College of Engineering and Technology, India

<sup>2</sup>Osmania University, India

### Substituent effects on surface tension ( $\gamma$ ) reversed from alcohols to Thiols and Phenols to Thiophenols: Physical-organic chemistry class-room tutorial

Taft and Hammett linear free energy relationships (LFER) are applied to the surface tension ( $\gamma$ ) data of aliphatic alcohols and thiols, phenols and thiophenols. The surface tension in alcohols and phenols decreased with increase in the electron donating power of the substituents. The Taft and Hammett plots of  $\log \gamma$  versus Taft  $\sigma^*$  and  $\log \gamma$  versus Hammett  $\sigma$  are linear with Taft  $\rho^*$  of 0.38 (fig.1) and Hammett  $\rho$  of 0.21 (fig.3) respectively. The effect is just reversed in thiols and thiophenols with Taft  $\rho^*$  of -0.50 (fig. 2) and Hammett  $\rho$  of -0.144 (fig. 4) respectively. Possible explanations are given for the change in the trend of substituent effects.

**Biography:** Prof. Jagannadhamb hails from a small remote village Kakarla of Telangana State. He had his primary and middle school education in his native village Kakarla (1957-1965) and High School education (1965-1969) from the holy town of Bhadrachalam. Prof. Jagannadhamb had all his university education right from BSc (Special) (1973), and MSc (1975) to PhD (1979) from Osmania University campus. Then he obtained his DSC (Doctor of Science) the highest degree from Sambalpur University, Orissa in 2009. Prof. Jagannadhamb joined Osmania University in 1983 after a brief serving as lecturer for 5 years during 1978-83 at Sardar Patel College, Secunderabad. He was a CSIR-New Delhi - Junior Research Fellowship Holder - 1976-1978. He visited Germany 4 times as Post Doctoral Fellow (Max-Planck-Institute for Radiation Chemistry, Germany - 1980-82, 1984, 1986, 1988) and USA (University of Kentucky, USA - 1991-93), (University at Buffalo, USA - 1993-95). He was a Summer

Professor (Rutgers University, New Jersey, USA - 1997) and Visiting NSF(USA)-DST(India) Summer Research Professor at the University of Connecticut, USA-1999, 2000, 2001, 2002). He was a Part-Time Post-Doctoral Student (D.Sc. at Sambalpur University - 2004-2009). He is the second faculty member in the entire Faculty of Science of Osmania University to receive this highest degree (DSC), and also to my knowledge in the entire undivided Andhra Pradesh.

rachuru1sanjeev1@rediffmail.com  
jagannadhamb1950@yahoo.com