**Abstract**

In this paper, we have introduced the atomic descriptors s(*f*)*k*to determine the local reactive sites of the molecular systems during electrophilic, nucleophilic and radical attacks. The condensed Fukui function and the newly introduced condensed atomic descriptor have been calculated for six different systems, namely glycine, alanine, aniline, BH2Cl,*trans*-FC(O)OF and*m*-anisidine. The individual atomic charges (gross charge) calculated by the MPA scheme have been used to calculate the condensed Fukui functions (*f* k) and the newly derived condensed atomic descriptors (sf)αk at B1-DZP level of theory. We carried out the calculation using the “stockholders” charge partitioning technique (i.e., Hirshfeld population scheme). The newly derived quantity gives the same reactive sites as the condensed Fukui functions, and the complexities associated with the negative Fukui functions are removed.