Structural and Thermodynamic Study Nonlinear Oligophenyls

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This work involves the thermodynamic and structural study of some nonlinear oligophenyls (*ortho*-quaterphenyl, *meta*-quaterphenyl, *ortho*-quinquephenyl and *meta*-quinquephenyl). The compounds were synthesized using the Suzuki-Miyaura methodology [1] and characterized by single crystal X-ray diffractionmetry. The thermodynamic properties for fusion were measured by DSC and the molar heat capacities, at $T = 298.15 \text{ K}$, were measured by means of a precise drop heat capacity calorimeter [2]. The standard molar enthalpies of sublimation, at $T = 298.15 \text{K}$, were determined using the Calvet microcalorimetry drop method. The standard ($p^\circ = 0.1 \text{ MPa}$) enthalpies of combustion, for the *ortho* and *meta* isomers were measured by mini-bomb combustion calorimetry [3]. The energetic and structural results allowed to perform the evaluation of the effect of the relative positions (*ortho* and *meta*) of the phenyl groups in the thermophysical properties of the compounds. With the exception of the terphenyl isomers, the temperature of fusion for the *ortho* series is always higher than the *meta* series. A subtle odd/even effect was found for the *ortho* series in the fusion temperatures and in the gaseous phase energetics that could be related with the intramolecular interactions.


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