

Trapezoidal Graphene-based Materials: Controlled Synthesis of Various Small Molecules and Polymer Derivatives

Bassam Alameddine^a

Anju, R.S.^(a); Shetty, S.^(a); Al-Mousawi, S.^(b); Al-Sagheer, F.^(b); Jenny, T.^(c)

^(a)Gulf University for Science and Technology, Mishref, Kuwait; ^(b)Kuwait University, Safat, Kuwait; ^(c)University of Fribourg, Fribourg, Switzerland.

Alameddine.b@gust.edu.kw

Efficient methods for the synthesis of various derivatives of tribenzopentaphene (TBP), dibenzophenanthroheptaphene (DBPH), and tetrabenzotriphenylenopyranthrene (TBPB) were developed (figure 1). In addition, three polyaromatic based polymers were synthesized containing comonomers of the trapezoidal tribenzopentaphene (TBP).^[1-4] These new laterally stretched trapezoidal PAH derivatives expand the scope of producing unsymmetrical tapered polycondensed aromatic hydrocarbon derivatives with customizable structural modifications. In addition, the hitherto moieties can be employed as synthons to produce graphene-related materials. The copolymers containing the trapezoidal tribenzopentaphene (TBP) polycyclic aromatic hydrocarbon present a straightforward synthetic method with the possibility to introduce several functional groups into to the polymer backbone, and consequently, enable the synthesis a wide variety of TBP-based polymers for various optoelectronic and sensing applications (figure 2).

References

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- [3] Alameddine, B.; Anju, R. S.; Al-Sagheer, F.; Jenny, T. A., *New J. Chem.* (2016) **40** (12), 10363
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Figures

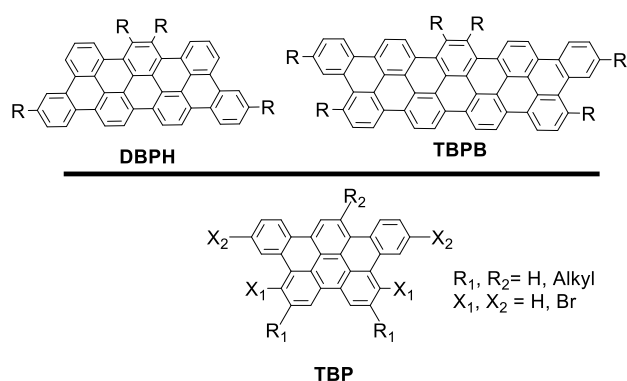


Figure 1: Structures of the trapezoidal molecules

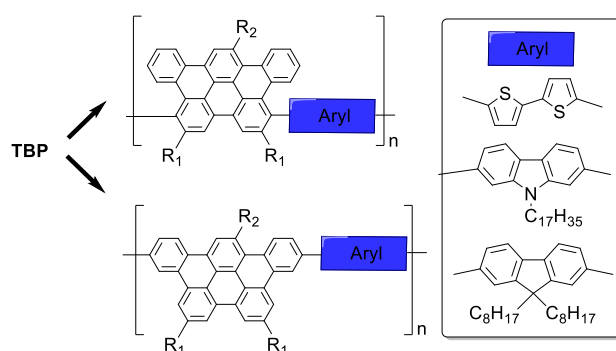


Figure 2: Structures of the co-polymers