

SYNTHESIS OF π -CONJUGATED POLYCYCLIC COMPOUNDS VIA LATE-STAGE CHALCOGEN EXTRUSION



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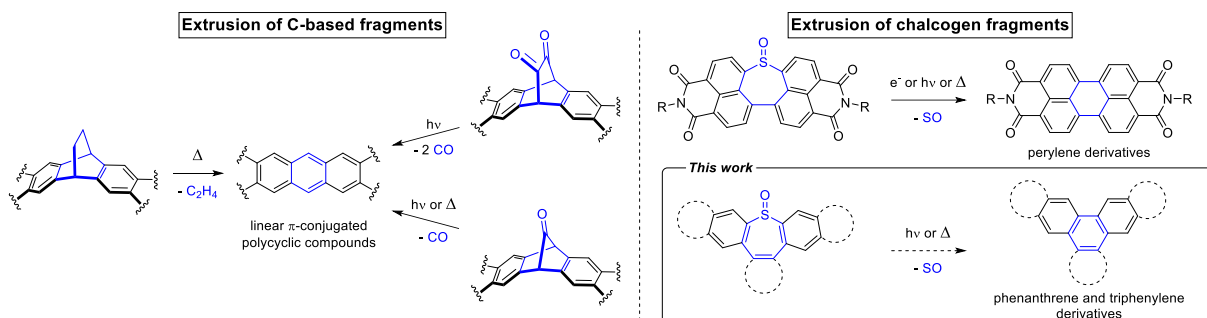
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The last decades have witnessed increasing interest around organic semiconducting materials as active components of electronic devices.¹ In particular, small-molecule organic materials hold great promise and a variety of π -conjugated polycyclic compounds (π -CPCs) have been shown to exhibit high charge carrier mobility.

The “*precursor approach*” has proved valuable overcoming stability and solubility issues faced by most of these molecules, which cannot be synthesized *via* in-solution organic chemistry. This approach relies on the synthesis, purification and characterization of soluble precursors of the electronically active target π -CPCs, before their quantitative conversion in the solid state under photoirradiation, thermal activation or electron exchange. Several techniques were reported leaning on the elimination of carbon-based small molecules, such as retro-Diels-Alder and decarbonylation processes, to yield core scaffolds incorporating linearly-fused benzene rings.^{2,3} More recently, the late-stage extrusion of chalcogen fragments has emerged as a highly promising tool to access a wider variety of π -conjugated polycyclic structures,⁴ such as perylene derivatives which were obtained *in situ* via the ring contraction of thiepine S-oxides.⁵



In this context, we are currently investigating the extension of the “*precursor approach*” to the synthesis of phenanthrene and triphenylene derivatives *via* a thermally- or photoactivated late-stage SO extrusion. Our strategies for the preparation of the soluble thiepine S-oxide precursors as well as their reactivity under thermal and photoactivation to yield the target π -CPCs will be presented.

References

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