

Synthesis, Thermal and Photochemical Reactivity of Highly Conjugated Arenediynes

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The presence of extended conjugation on alkynyl units of arenediynes can have a profound effect on enediyne reactivity. Incorporation of naphthalen-1-yl and phenanthren-9-yl substituents lead to a novel [2+2] photodimerization upon irradiation at 350 nm. Concentration dependent fluorescence data suggests excimer formation may play a role in generation of the photo dimer. We are currently exploring the photoreactivity of electron rich derivatives containing one or two methoxynaphthalen-1-yl substituents, which in the case of naphthalen-2-yl derivatives facilitates C1-C6 Bergman cyclization upon irradiation at 300 nm. Our next goal will be to explore photoreactivity of arenediynes containing one electron donating and one electron withdrawing arylalkynyl substituent. Finally, we have also prepared a novel butadiynyl derivative which undergoes thermal C1-C6 cyclization; we are currently examining the photoreactivity of this derivative.

