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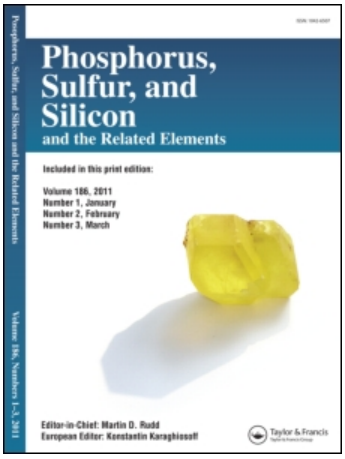

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(Benzo)Cyclobutenone Ethylenedithioacetals as Precursors for Highly Substituted Naphthalenes and Cyclopentenones

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INTRODUCTION

Cyclobutenones are well established as useful starting materials for highly substituted quinones and aromatic compounds.[1] Electrocyclic-ring opening leads to ketenes as intermediates, which undergo further reactions such as [4 + 2] and [2 + 2] cycloadditions.[2]

Reported here is a regiospecific synthesis of cyclopentenones employing a formal [4 + 1] cycloaddition of carbenoids on cyclobutenone ethylenedithioacetals[3] and a synthesis of naphthalenes using benzocyclobutenone ethylenedithioacetals[4] as starting materials employing a hydrosilylation/Diels–Alder reaction.

RESULTS

Both processes work in a one-pot manner. Reaction with different dienophiles (both alkenes and alkynes) leads to naphthalenes in good yield. Heating of substituted cyclobutenones (usually in toluene at 95°C) and addition of different carbenoids (silylated diazomethanes) leads to cyclopentenones in excellent yields. These compounds have potential as starting materials for further reactions, for example, the synthesis of antibiotics and their analogues such as methylenomycins and thio-anthracyclines.

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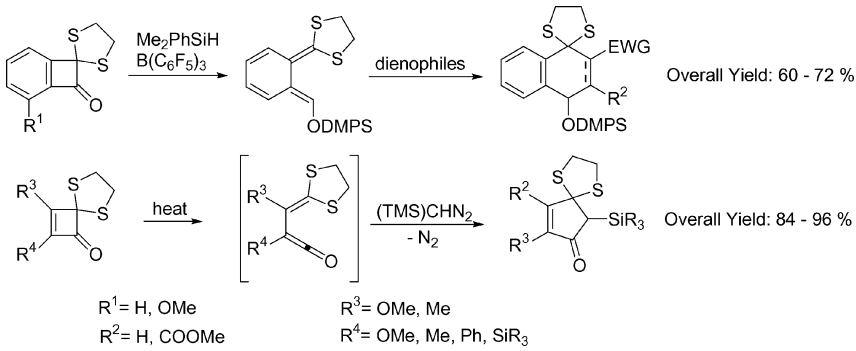

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