



The Wavelength Matters: A Photochemical Investigation of Silyl- and Germyl-1,2-diones

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In this lecture, a synthetic approach towards an isolable bissilyl-1,2-dione **1**, a novel acylsilane,^[1] is presented. The UV/Vis spectrum of **1** shows two distinct $n \rightarrow \pi^*$ absorption bands, which do not overlap and have differing characters. Thus, we performed irradiations at $\lambda = 365$ and at $\lambda = 590$ nm, targeting these two different transitions. Remarkably, we found wavelength dependent rearrangements towards two novel examples of complex silicon frameworks. The irradiation with $\lambda = 365$ nm gave rise to the formation of a novel isolable siloxyketene **2**, by a hitherto unknown 1,3-hypersilyl migration. In contrast to that, the irradiation with $\lambda = 590$ nm leads to the quantitative formation of siloxirane **3**, by a 1,4-trimethylsilyl migration.^[2] Consequently, we transferred this methodology to germanium and used compound **4** and **5** as starting point for our manipulations.

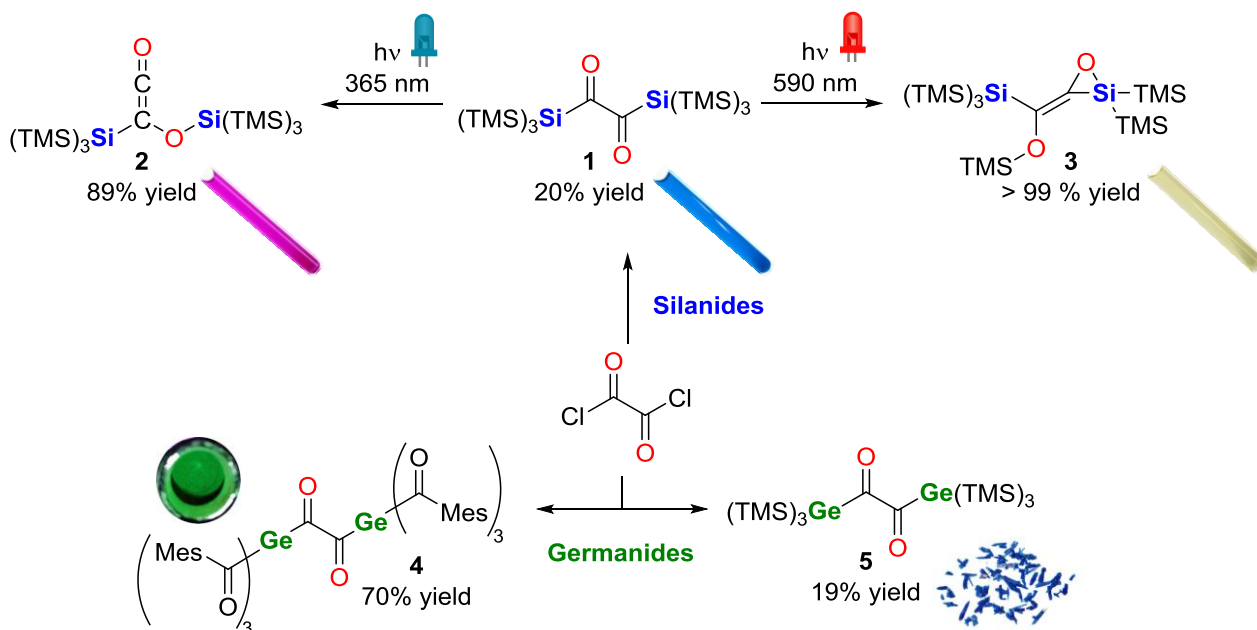


Figure 1. Synthetic routes towards silyl- and germyl-1,2-diones with photochemical rearrangement of **3**.

References

[1] a) A. G. Brook, S. C. Nyburg, F. Abdesaken, B. Gutekunst, G. Gutekunst, R. Krishna, M. R. Kallury, Y. C. Poon, Y. M. Chang, W. N. Winnie, *J. Am. Chem. Soc.* **1982**, *104*, 5667, b) J.-H. Ye, P. Bellotti, T. O. Paulisch, C. G. Daniliuc, F. Glorius, *Angew. Chem. Int. Ed.* **2021**, *60*, 13671.

[2] M. Drusgala, G. Glotz, F. Hamm, R. C. Fischer, A.-M. Kelterer, G. Gescheidt, M. Haas, *Angew. Chem. Int. Ed.* **2023**, submitted 02/2023