

## Phosphorus — The Devil's Element?

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The chemical element phosphorus was discovered by the German alchemist Hennig Brand in 1669 on attempting to create the fabled Philosopher's stone through distillation of urine. He produced the white form of phosphorus, which glows upon exposure to oxygen. This characteristic led to its name, which means "light bearer" in Greek. Until the process for manufacturing red phosphorus, which is far less flammable and much less toxic, was discovered, the use of white phosphorus resulted in many murders, suicides and accidental poisonings [1].

The chemistry of phosphorus is, without a doubt, one of the most intriguing fields of inorganic and organic chemistry. It comprises a vast number of classes of compounds with many elements in the periodic table and combinations thereof. Phosphorus compounds are widely used in fertilisers, food additives, detergents, flame retardants, pharmaceuticals, pesticides and insecticides, to name but a few. Furthermore, phosphane ligands play an important role in homogeneous catalysis, especially chiral ones, which can improve significantly the efficiency, specificity and selectivity of catalysts. Metal phosphides, on the other hand, find applications in materials science.

Besides an overview on the element phosphorus and its remarkable chemistry, examples of switchable catalysts [2] and suitable precursors for phosphorus-rich metal phosphides [3] will be presented.

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[1] J. Emsley, *The 13th Element*, John Wiley & Sons, Inc. 2000.

[2] P. Neumann, H. Dib, A.-M. Caminade, E. Hey-Hawkins, *Angew. Chem. Int. Ed.* **2015**, *54*, 311-314

[3] T. Grell, D. M. Yufanyi, A. K. Adhikari, M. B. Sárosi, P. Lönnecke, E. Hey-Hawkins, *Pure Appl. Chem.* **2019**, DOI: <https://doi.org/10.1515/pac-2018-1013>