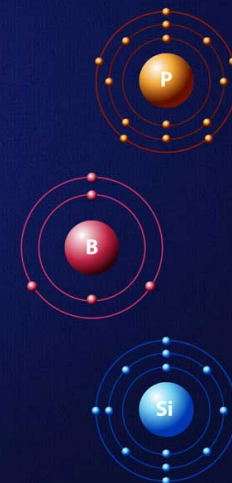


# PBSi 2017

International Conference On  
Phosphorus, Boron and Silicon

July 3-5, 2017 | Paris



## Playing with Phosphorus Allotropes from Organometallic Chemistry to Innovative 2D-Materials

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The lecture will summarize the most recent achievements in the area of transition metal-mediated reactivity of elemental phosphorus deriving from the authors' own research at ICCOPM-CNR Florence. Highlights of the presentation will include:

- the metal-mediated activation of white phosphorus with particular emphasis to the unusual hydrolytic behavior of the P<sub>4</sub> molecule following its  $\eta^1$ -coordination to a metal centre (Fe, Ru, Os), which affords a variety of organometallic compounds stabilizing unusual low-valent phosphorus species as ligands;<sup>1</sup>
- the high pressure reactivity of red phosphorus with water and other small molecules;<sup>2</sup>
- some preliminary results dealing with the chemistry of the less reactive allotrope of the element, i.e. black phosphorus,<sup>3</sup> including the easy access to 2D-flakes of phosphorene (the all-P counterpart of graphene) via a solution synthesis which avoids the use of the boring and scarcely productive scotch-tape exfoliation method and its reactivity with organometallic synthons.

Acknowledgments: MP thanks all the coworkers listed in the references. Thanks are expressed to EC through the SUSPHOS grant RFP7-PEOPLE-2012-ITN - 317404 and to the European Research Council for funding the project PHOSFUN "Phosphorene functionalization: a new platform for advanced multifunctional materials"(GA No. 670173) through an ERC Advanced Grant).

### References:

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