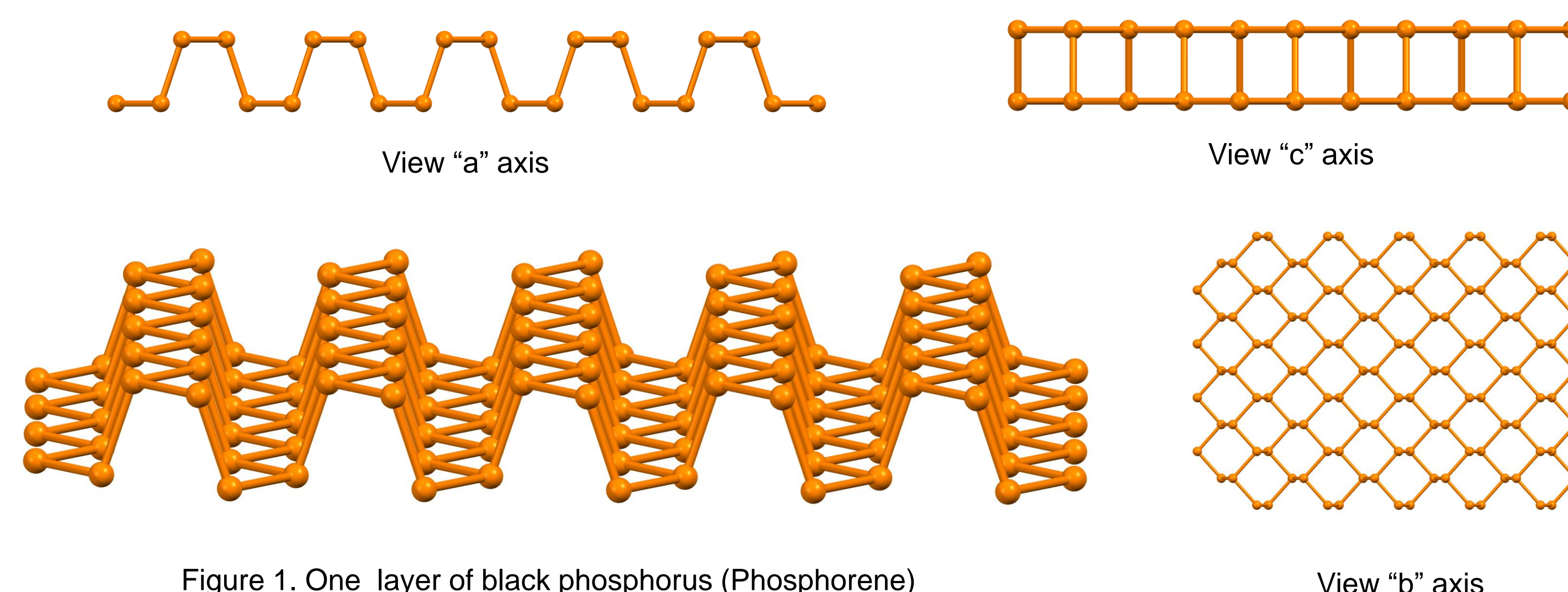


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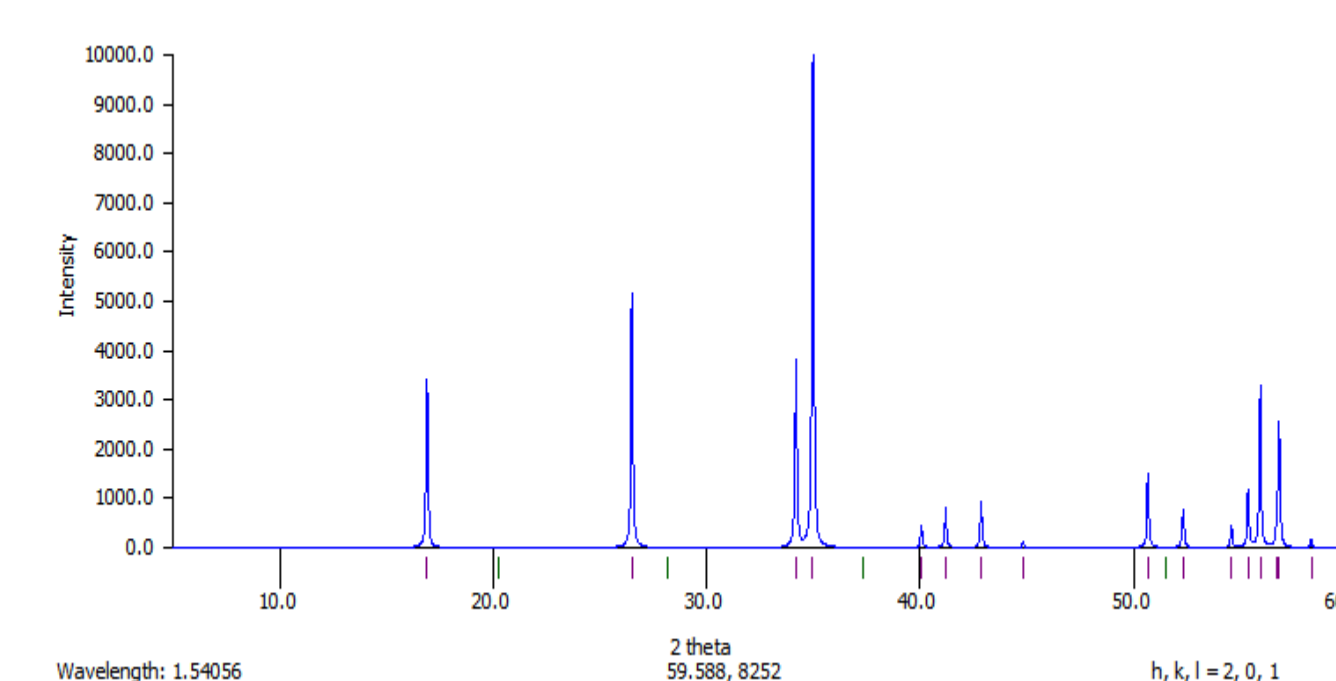
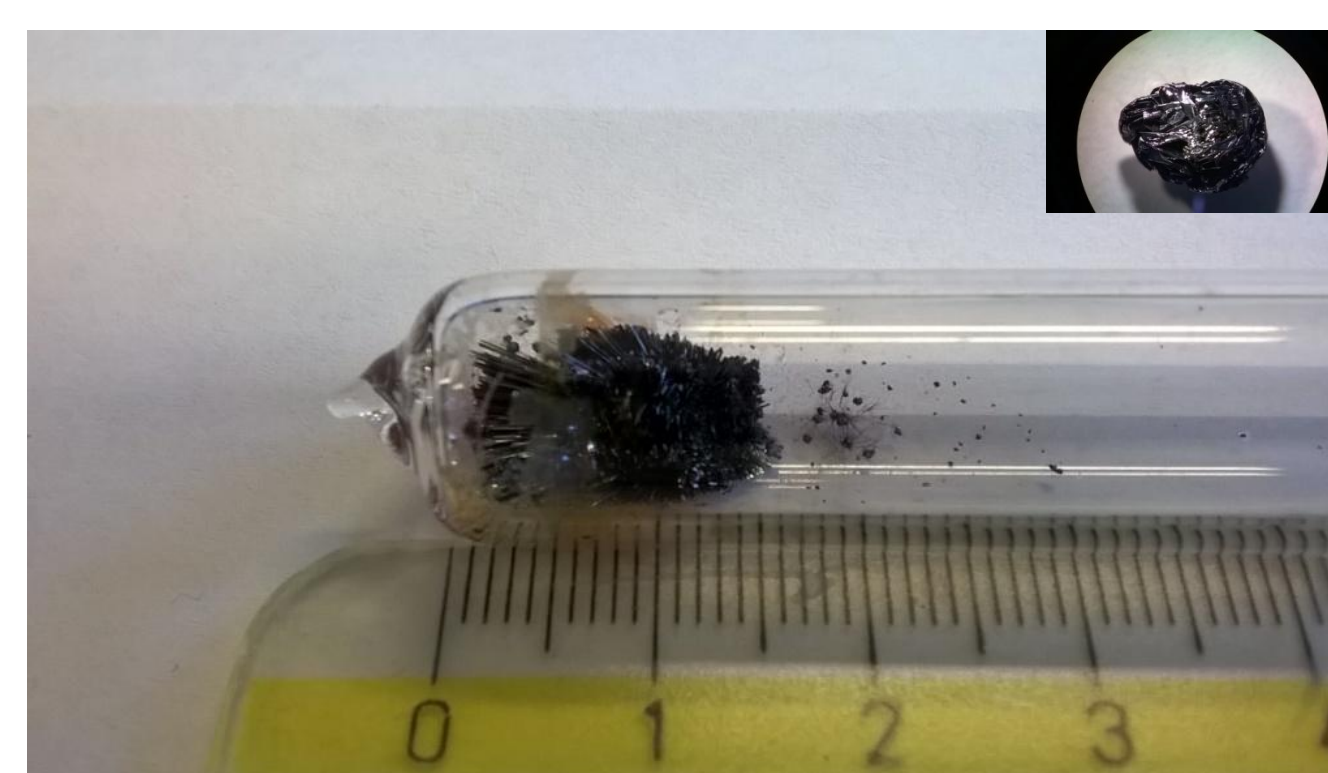
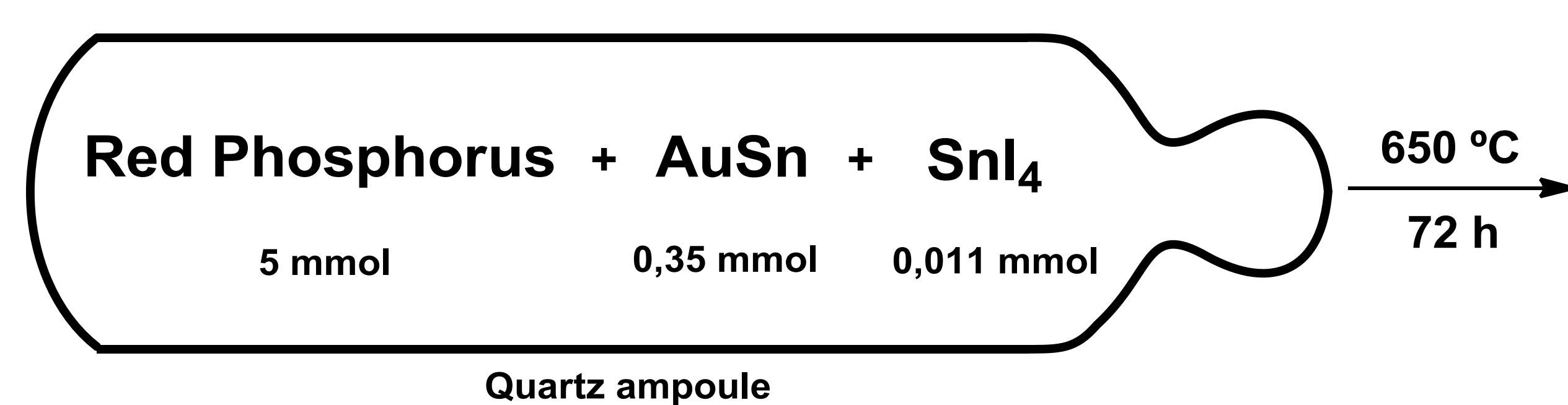
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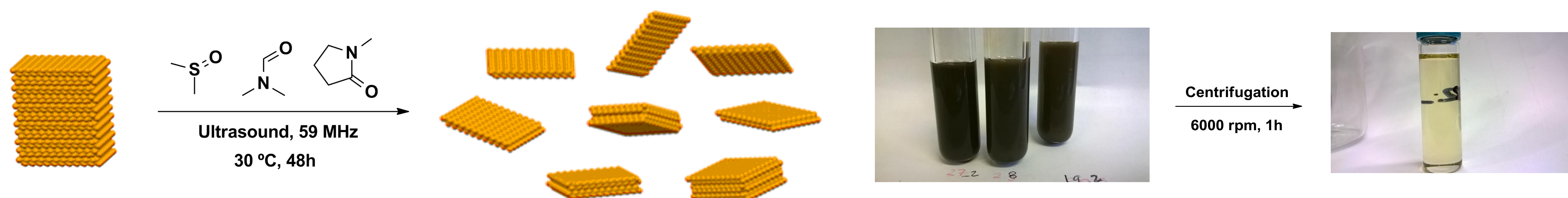
2D materials are very promising in nanodevice applications due to their surprising properties such as high electric mobility, outstanding structural properties and large specific surface area.<sup>[1]</sup> Recently, phosphorene (Figure 1), the all-P counterpart of graphene, has been prepared starting from black phosphorus (BP). Small amounts of single and few layers sheets of the new material have been obtained by either micromechanical cleavage (Scotch tape method) or liquid exfoliation.<sup>[2]</sup>



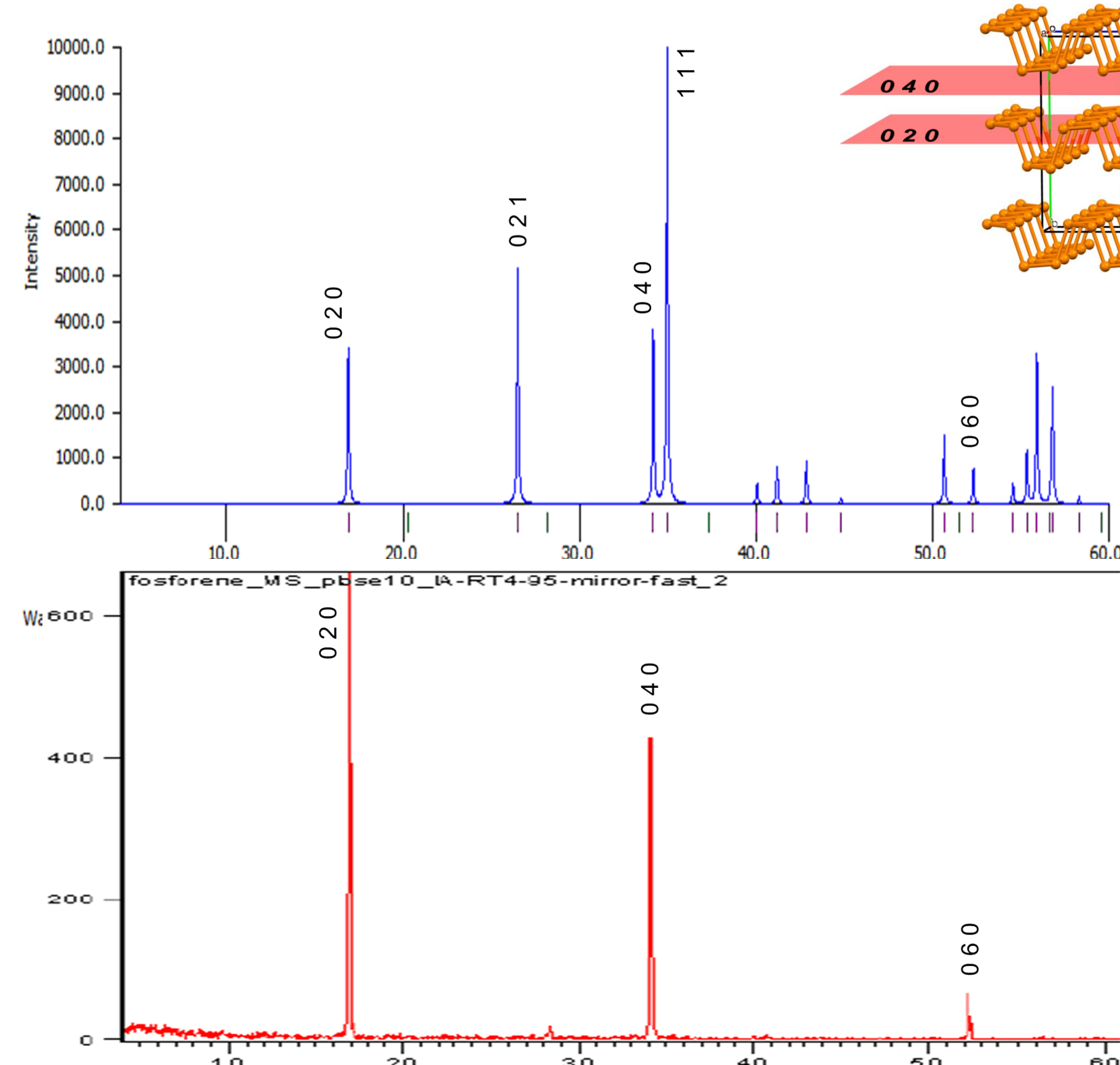
## Synthesis of Black Phosphorus<sup>[3]</sup>



## Preparation of Exfoliated Black Phosphorus<sup>[1c]</sup>

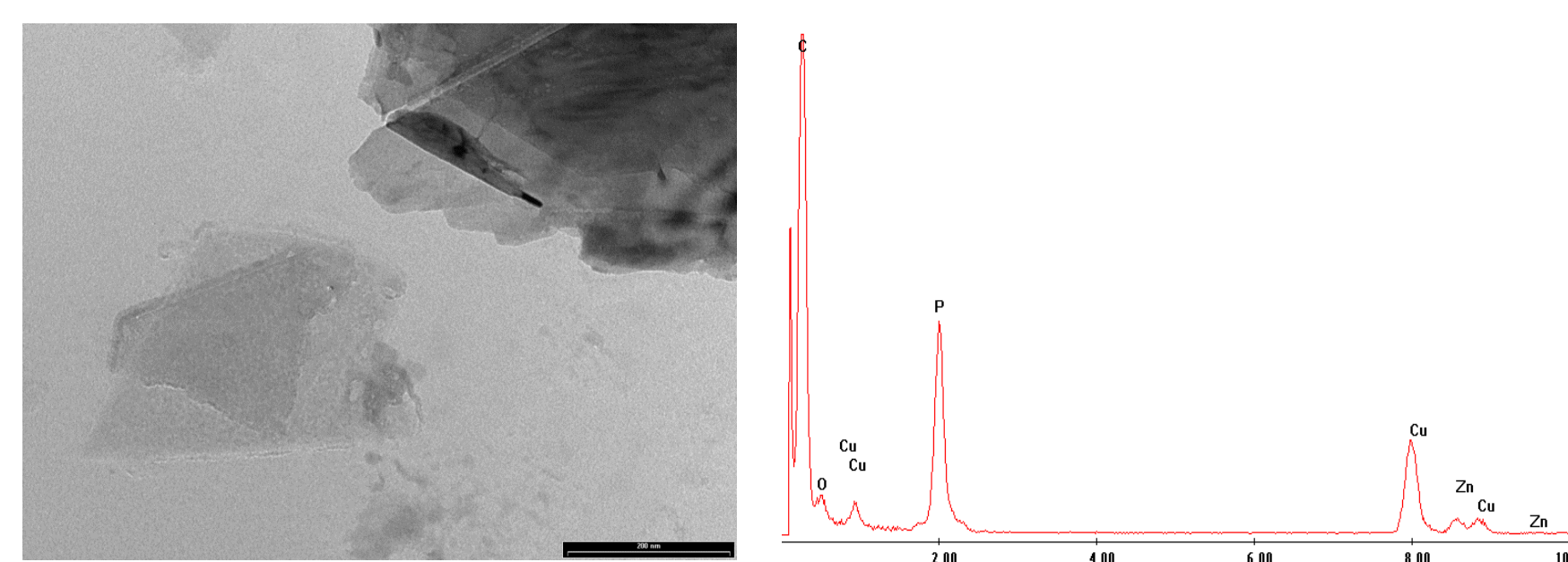


## Powder Diffraction of Exfoliated BP

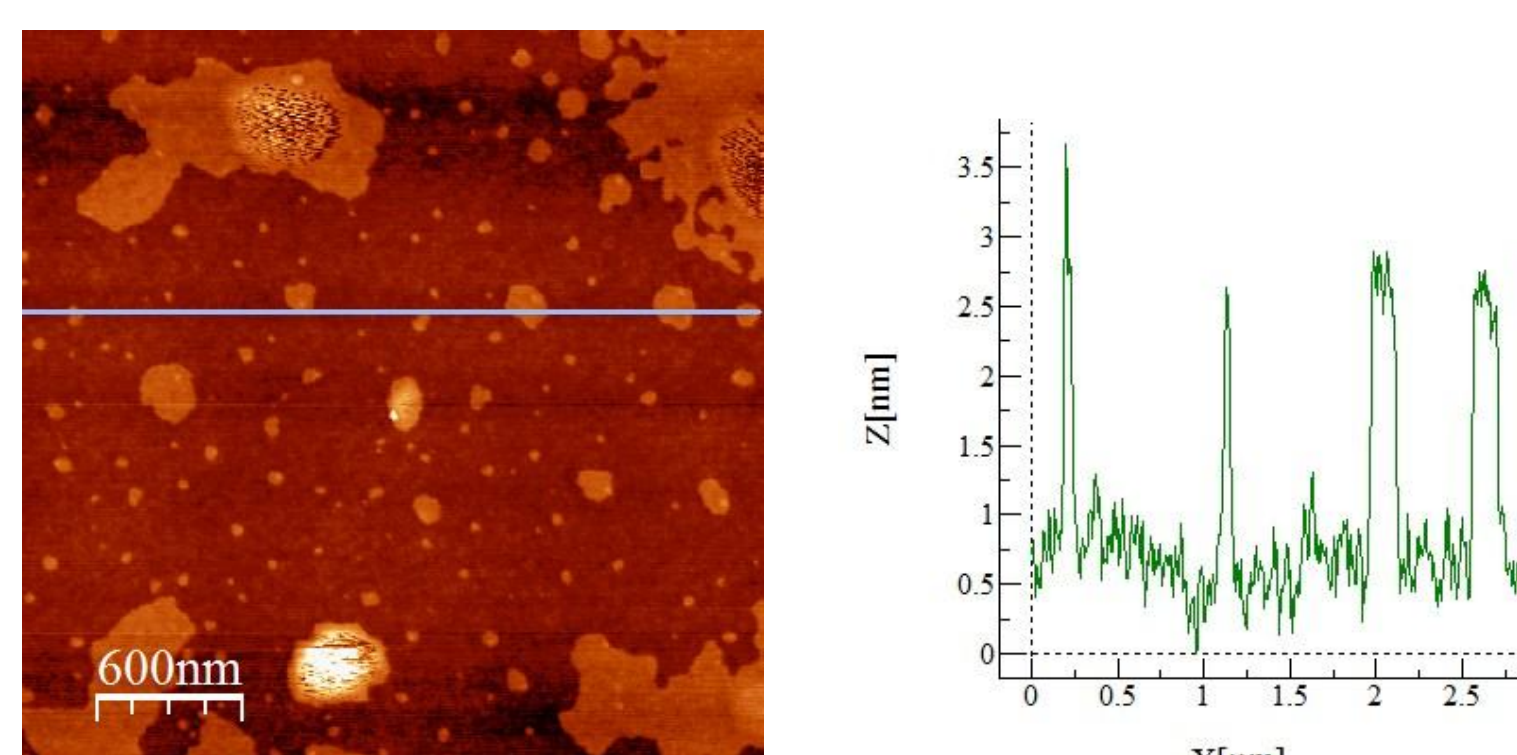


X-ray powder diffractogram of exfoliated and calculated diffractogram of black phosphorus (CuK $\alpha_1$  radiation). A orientation effect due to the pronounced contribution of the ac-plane parallel to the X-ray beam (plate-like crystals) led to the enhancement of the intensity for all 0 k 0 reflections.

## TEM



## AFM

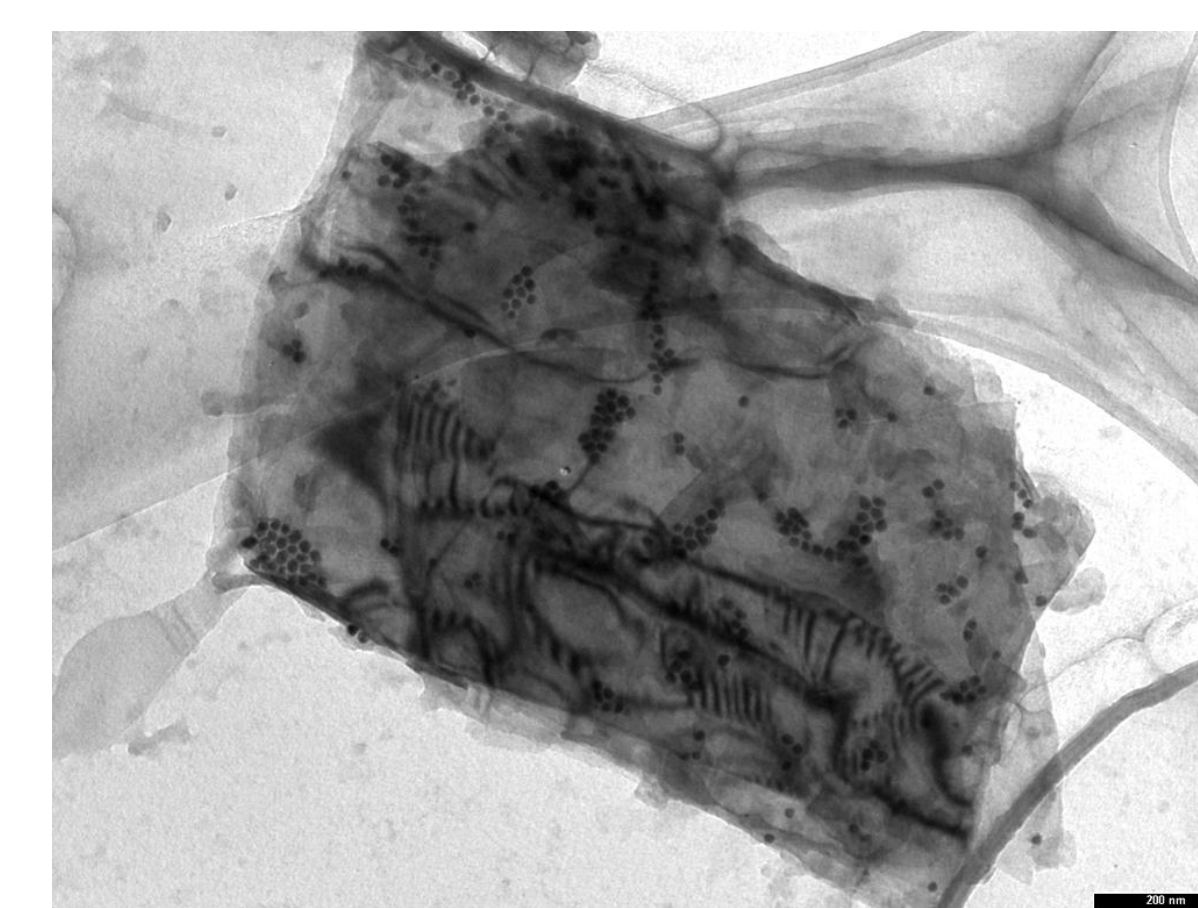


## Adsorption of gases\*

Gas	Bulk BP		Exfoliated BP	
	77 K	296 K	77 K	296 K
H <sub>2</sub>	0,02	0,01	0,1	0,05
CO <sub>2</sub>	-	0,3	-	0,7
CO	-	0,2	-	0,5

\* 1 atm

## Supporting of nanoparticles



## References

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