

Use of red and black phosphorus as matrix in MALDI TOF Mass spectrometry

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Red and black phosphorus when ablated are forming clusters P_n ($n = 1 - 89$, mostly odd)^{1, 2}. In this work, the comparison of mass spectra concerning red and black phosphorus was done. The ionization of red phosphorus yields is approximately 5 times higher than that of black phosphorus, probably because of phosphorene-like structure of black phosphorus. It has already been mentioned that red phosphorus can be used as matrix according to Sladkova *et al*¹. Similarly, black phosphorus can be used as matrix proposed by He *et al*². We have done, according to the literature³, exfoliation of black phosphorus and exfoliated material called phosphorene was examined as matrix. Both red and black phosphorus or phosphorene were examined as matrices for peptides.

Concluding, red or black phosphorus or phosphorene can be used with advantage as cheap, effective and simple matrices for biomolecules analysis in MALDI TOF Mass Spectrometry. Simultaneously, the clusters of phosphorus can be used as internal calibrant which is offering another advantage.

References:

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