Supporting Information

for

Isolation of cubic Si$_3$P$_4$ in the form of nanocrystals

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Additional experimental data

Selected temperature for doping of Si NPs with phosphorus and the calculation of the diffusion constant resulted from the equation $D = D_0 e^{\frac{-Q}{RT}}$, where D_0=20 cm^2/sec, Q=364 kJ/mol, T=670°C [1].
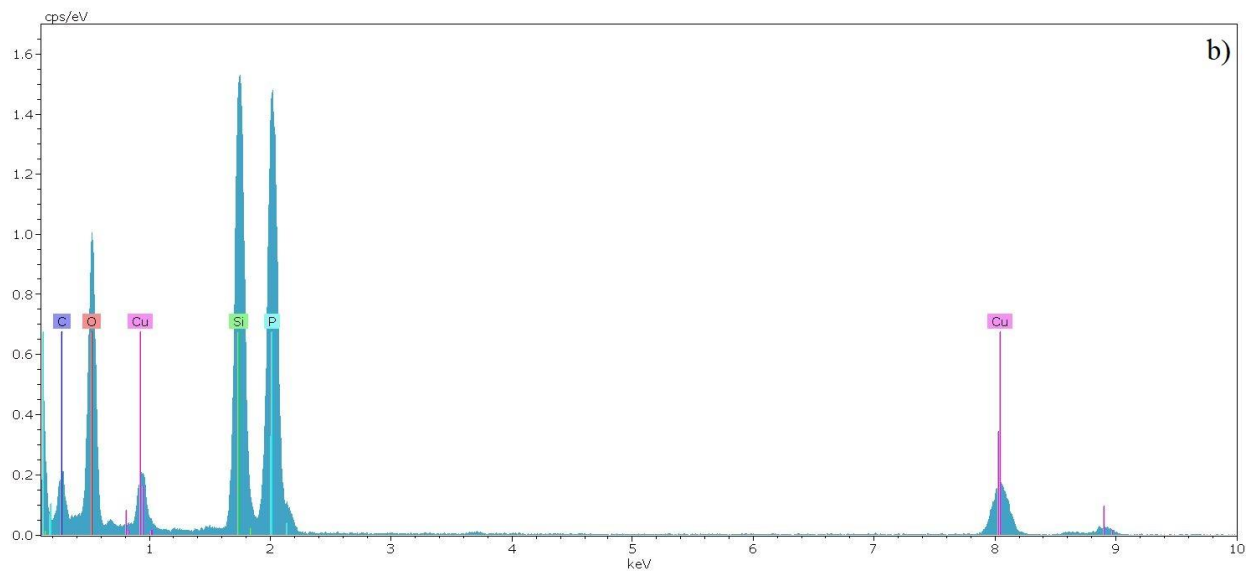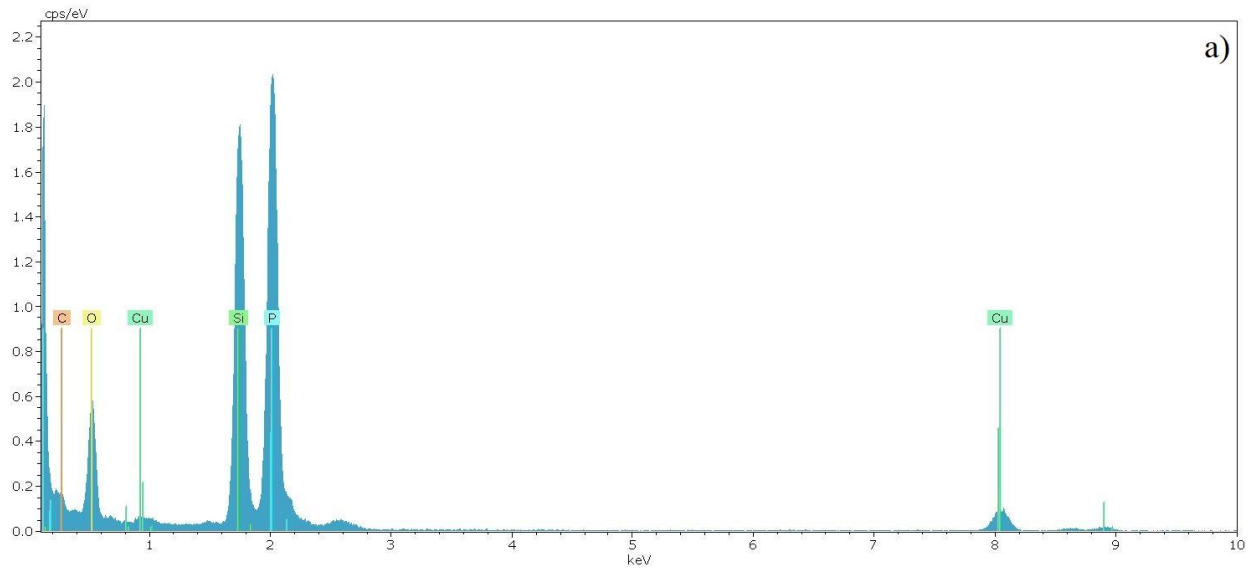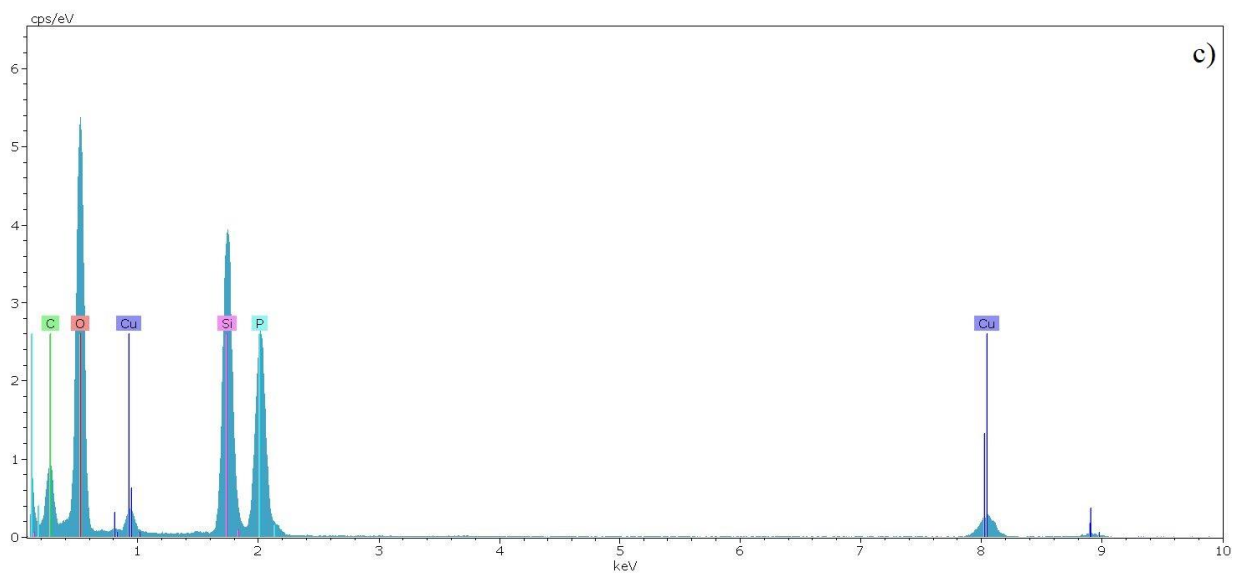
Figure S1: EDX spectra of (a),(b) – SP550, (c) – SP670.

Table S1: The correlation of bands and wavenumbers for Si NPs, hydrogenated Si NPs and SP400, SP670 and SP900 samples.

Assignment	Wavenumber, cm^{-1}					
	Reference data	Sample				
		Si NPs	Hydrogenated Si NPs	SP400	SP670	SP900
O-H stretching	3700-3200 [2]	3420	3509 3450	-	3450	3329
=C-H stretching	3100-3000 [2]	-	-	3073	-	-
Methyl asymmetric C-H stretching	2960 [3]	2960	2957	2956	2960	2956
Methylene asymmetric C-H stretching	2930 [2]	2925	2924	2925	2926	2921
Methylene symmetric C-H stretching	2850 [2]	2854	2855	2853	2857	2853
(O$_3$)Si-H stretching	2250 [4]	2267	-	-	-	2266
(Si$_3$)Si-H stretching	2100 [4]	2105	2107	-	-	-
Overtone HRC=CH$_2$	1850-1800 [3]			1821		
C=O stretching	1730 [2]	1728	1711	1743-1730-1718	1714	1720
H$_2$O deformation	1640 [5]	1623	1631	-	1646	1641
C=C stretching	1680-1600 [2]	-	-	1642	-	-
Methylene scissoring	1465 [2]	1465	1466	1466	1469	1465
Methyl symmetrical C-H bending	1380 [2]	-	-	1378	-	-

Methylene twisting	1300 [2]	-	-	1302	-	-
Si-O-Si stretching	1200-1000 [2], [6]	1208 1069	1167 1072	1186 1098	1205 1090	1183 1073
C-H deformation non-planar (vinyl)	995-985 [3]	-	-	992	-	-
C-H deformation non-planar (vinyl)	915-905 [3]	-	-	911	-	-
H-Si-O$_3$ deformation	880 [6]	880	-	-	-	874
H-Si-O$_2$ deformation	850 [6]	-	863	-	-	-
Si-O-Si symmetrical stretching	810 [7]	804	814	806	801	806
Methylene rocking	720 [2]	-	720	721	-	-
=C-H out-of-plane bending	1000-600 [2]	-	-	668	-	-
Si-Si-H$_x$ deformation	637 [6]	633	-	-	-	-
Si-P stretching	-	-	-	494	492	490
Si-O-Si rocking	450 [7]	452	-	-	-	-

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