

Analiza spectroscopica

Sunt raportate alaturat analizele de caracterizare chimica elementala a blocurilor de material (dupa caz, efectuate in mai multe puncte de interes). Dupa stiinta echipei, ca si celelalte informatii raportate, este prima caracterizare de acest fel facuta pentru material.

Analizele se vor putea dezvolta, in special intr-un mod directionat de planul elaborat impreuna cu geologul si restauratorul.

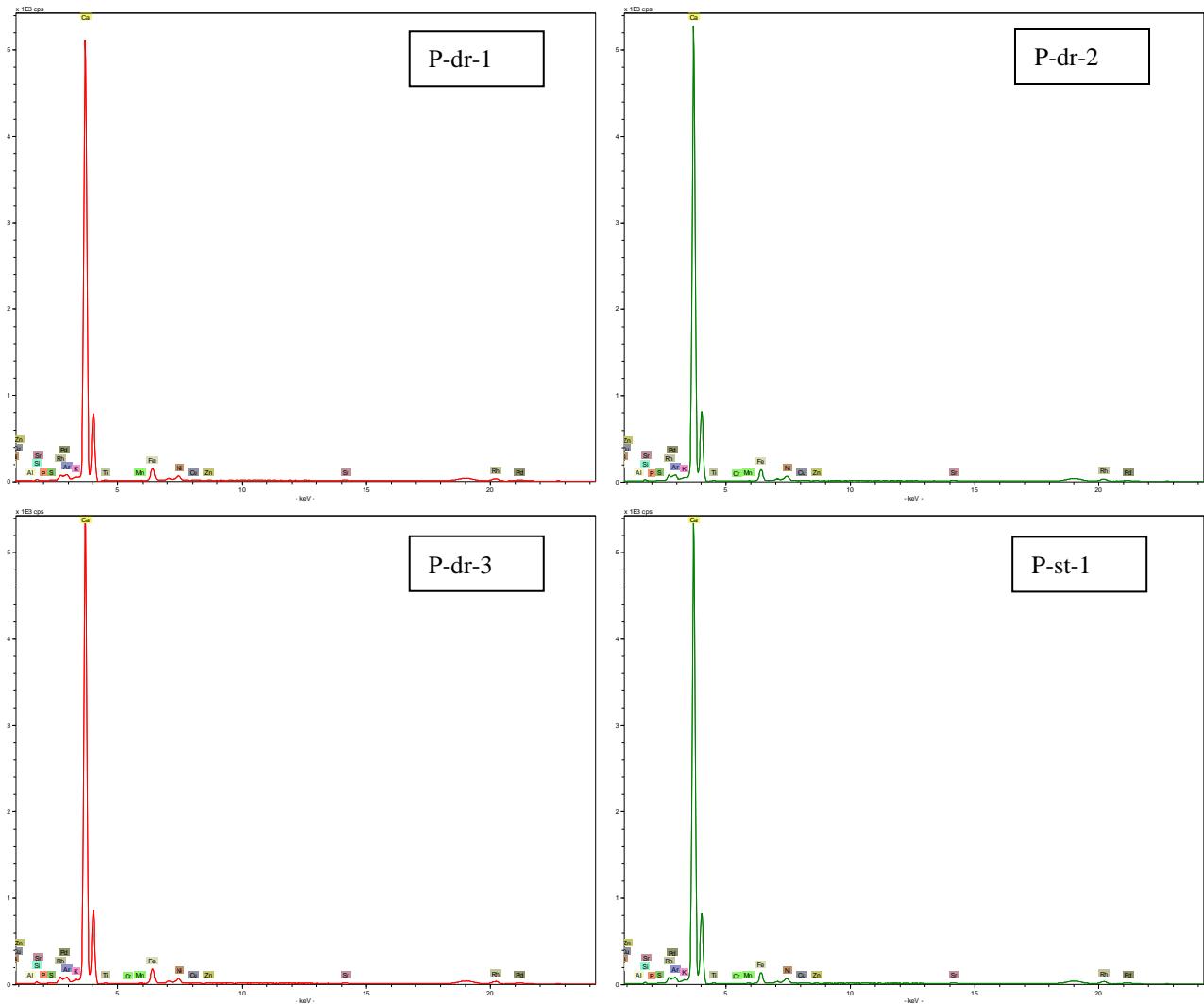
Sunt rezultate extrem de utile pentru studierea mecanismelor de degradare, pentru alegerea materialelor pentru interventii (restaurare, intretinere, protectie), sunt esentiale in stabilirea "amprentei" materialului, la care se face apel in situatii critice si nedorite de vandalism cu urmari grave etc. Compatibilitatea eventualelor materiale de adaus se poate evalua in etapa de proiectare a oricarei interventii.

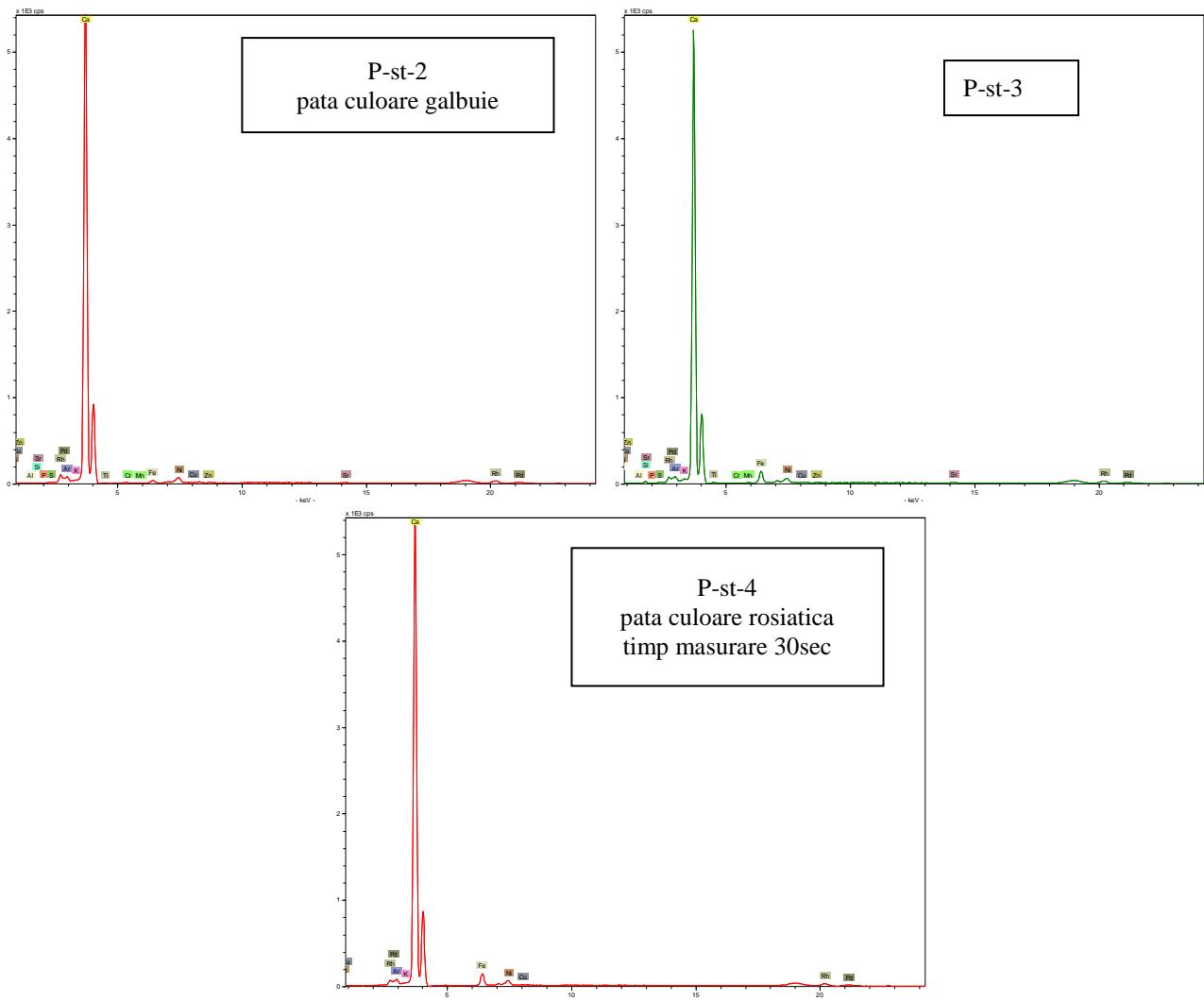
Analizele spectroscopice sunt efectuate si pentru mai multe piese din gradina Casei Ganescu, caz in care ofera "amprenta" necesara pentru inventariereasi identificarea pieselor.

Un mai amplu comentariu se urmareste si in legatura cu analizele altor piese (precum bancile din piatra amplasate la N si S de Poarta; blocul de piatra de langa turnul de apa din parc etc). Analizele si interpretarea pluridisciplinara a datelor pot deschide cercetari privind originea materialelor, ruta, identificarea materialelor inrudite, corelari cu studiile de istorie a artei etc.

Bancile de piatra

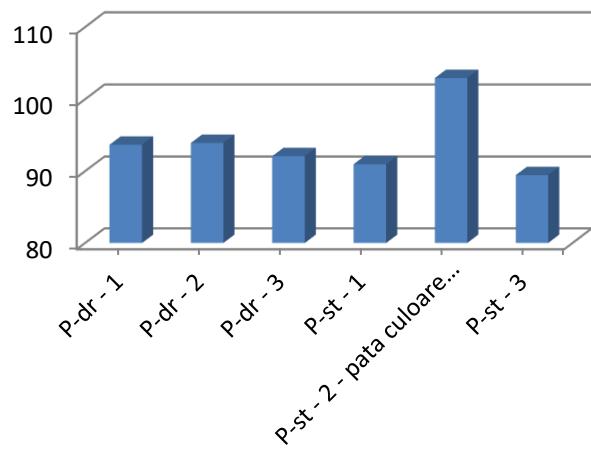
- Elemente comune in spectre: Ca (*ma*), Fe (*mi*), Al, Si, P, S, K, Cr, Mn, Cu, Zn, Sr, Nd (?), Sm (?), Te (?), Sn (?) (*u*), Ar (din aer), Rh, Pd, Ni (din aparat)
- Proba P-st-2-pata culoare galbuie are spectrul putin diferit de celelalte puncte:
 - nu pare a avea K si Mn
 - are cel mai putin Fe si cel mai mult Ca (dar similar ca nivel cu celelalte puncte)
 - probabil maximul largit care apare in jur de 5.32 KeV este un artefact
- Au fost luate in considerare spre comparatie doar probele masurate timp de 60 sec



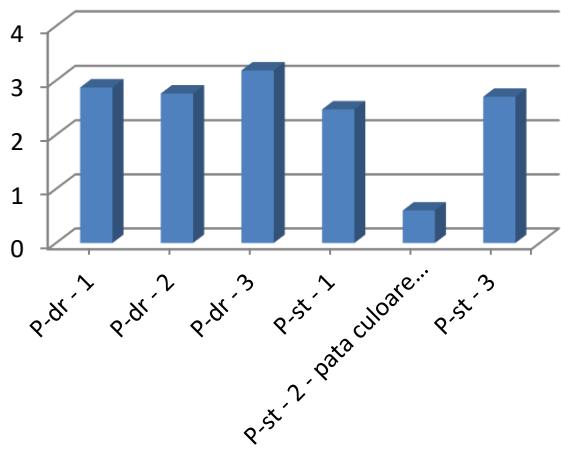


Grafice pe elemente

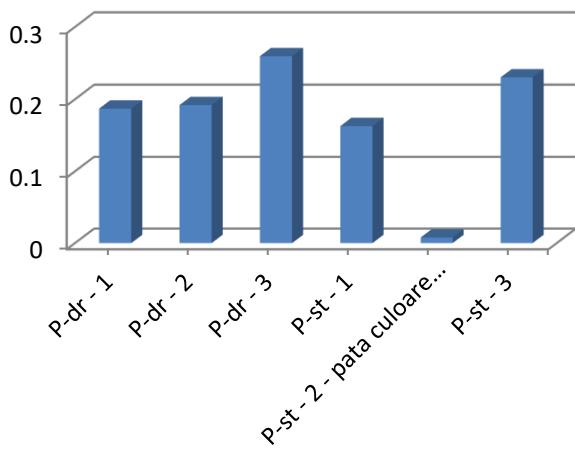
Ca K12



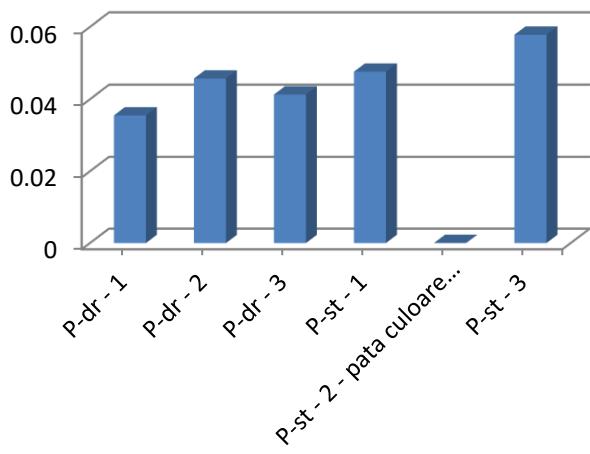
Fe K12



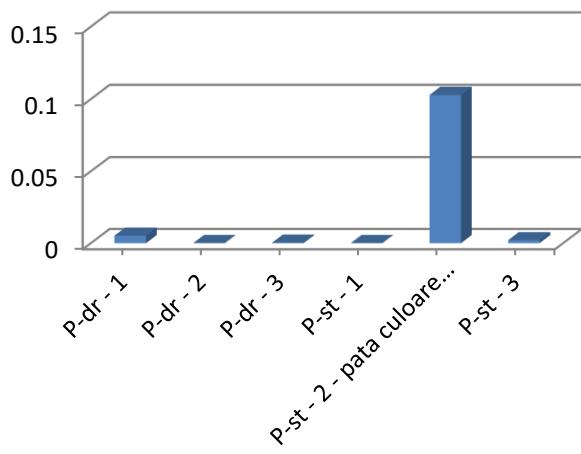
K K12



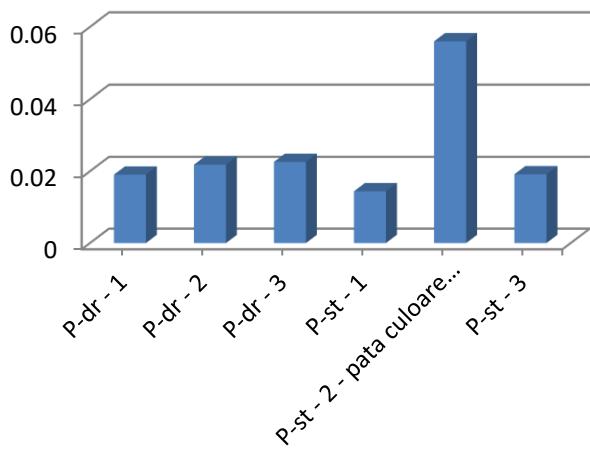
Mn K12

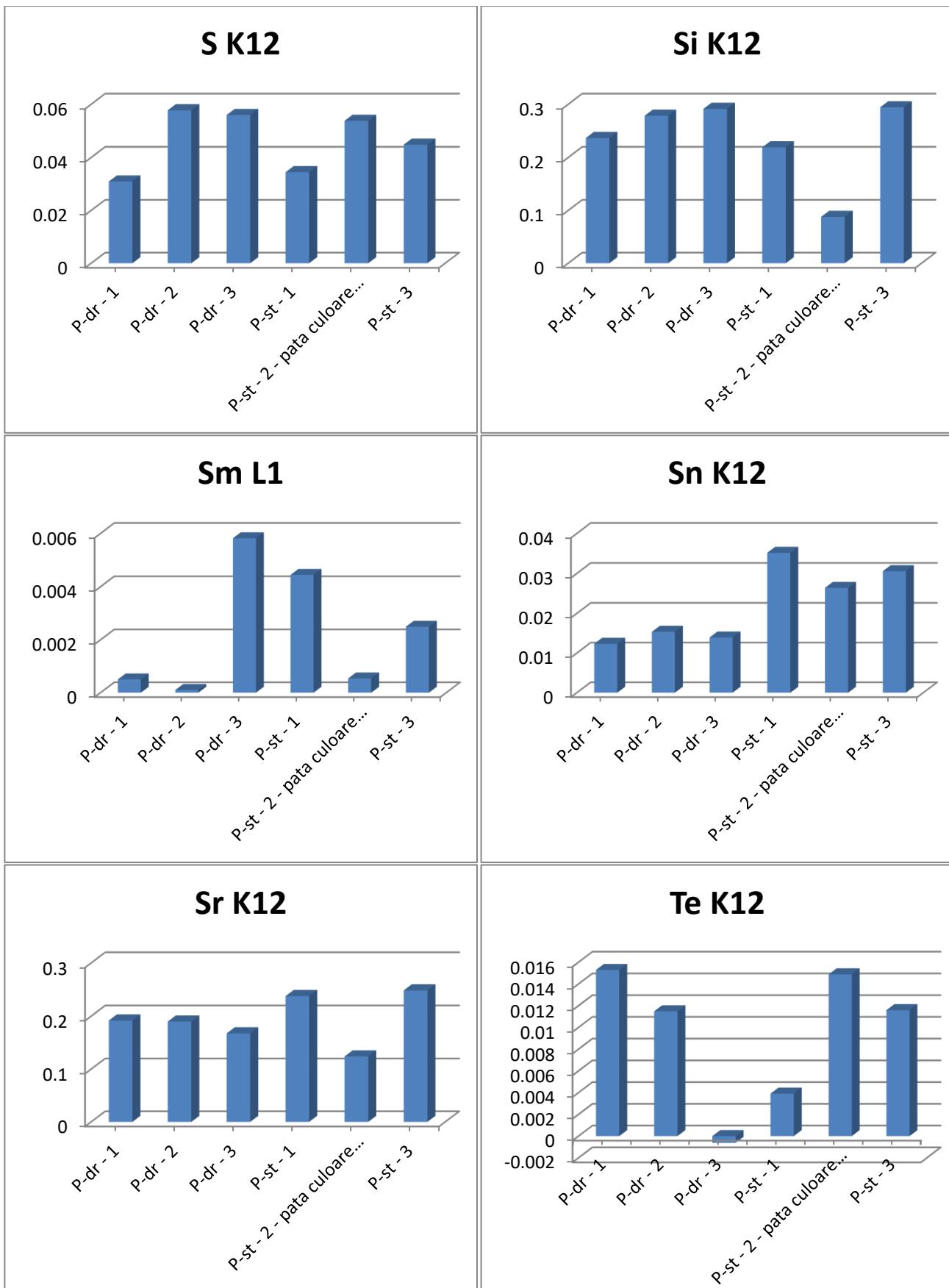


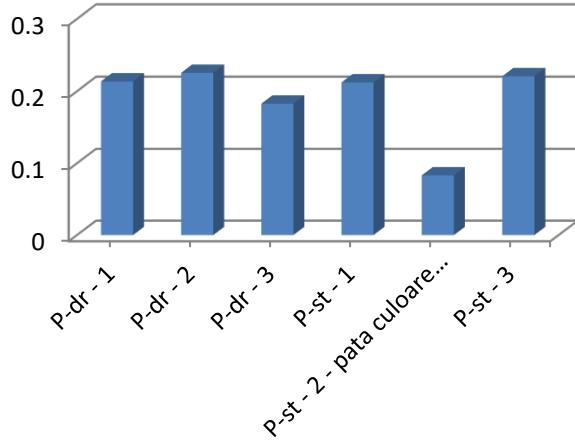
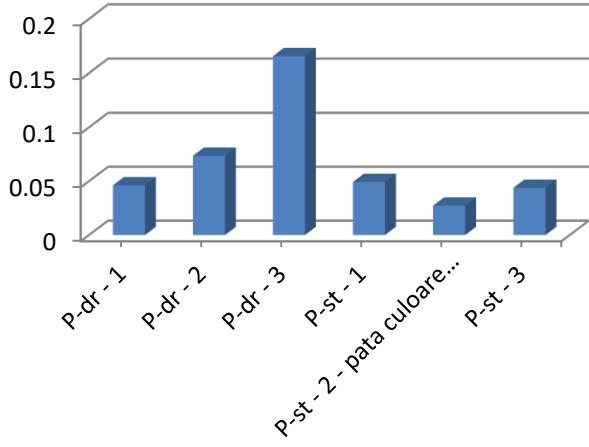
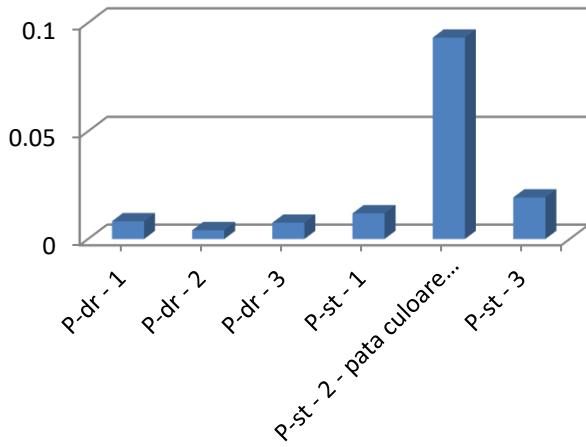
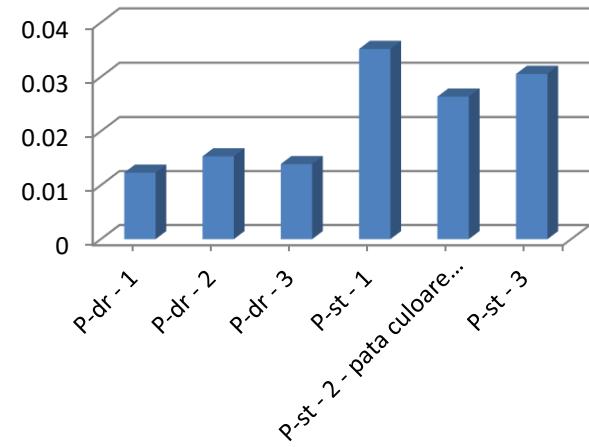
Nd L1



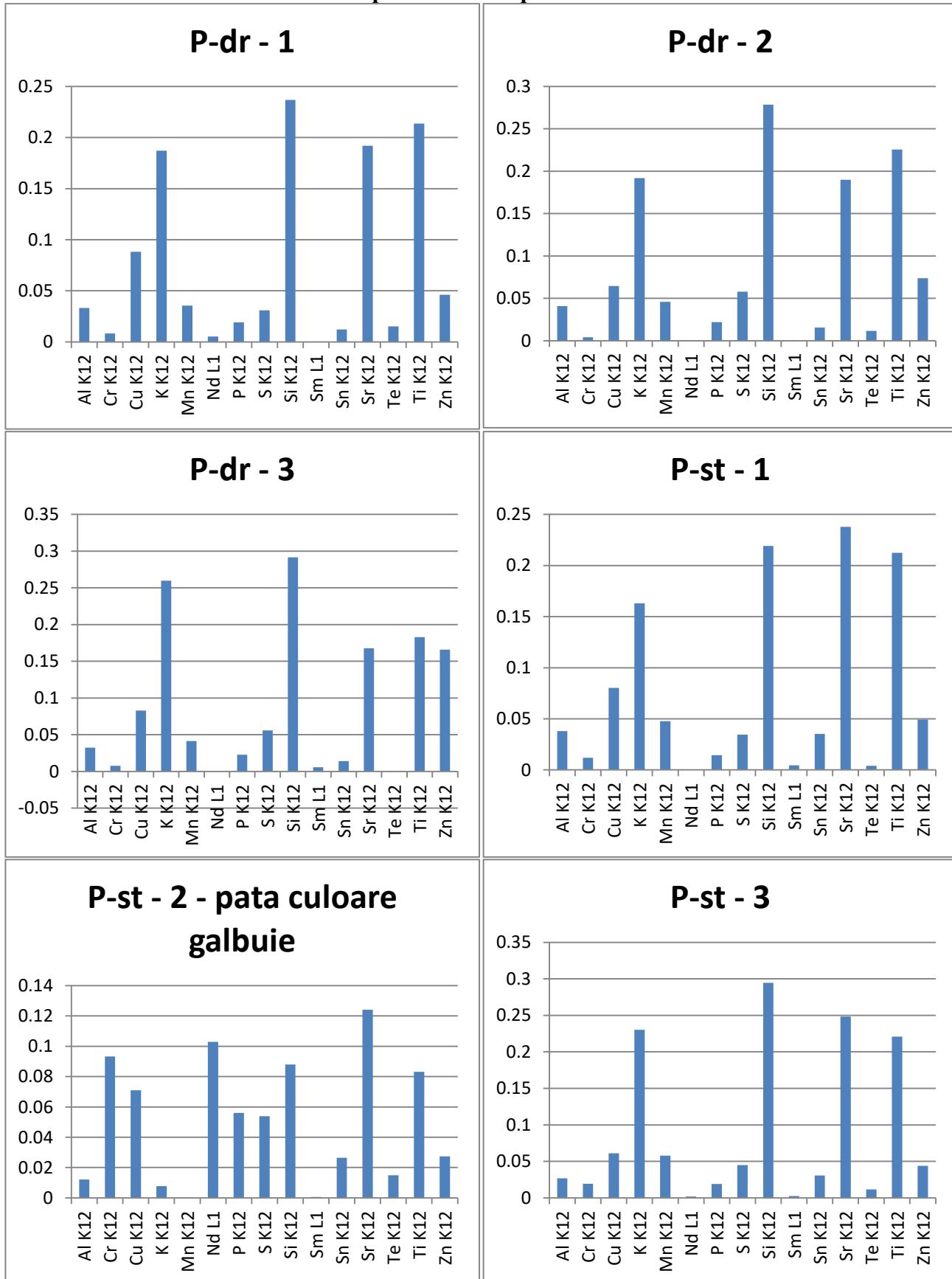
P K12





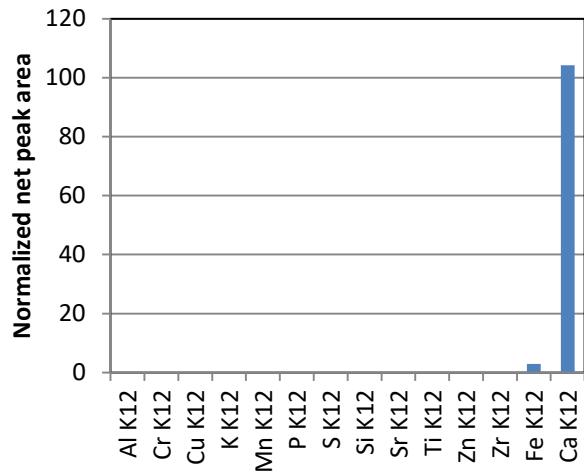
Ti K12**Zn K12****Cr K12****Sn K12**

Grafice pentru fiecare punct de masurare

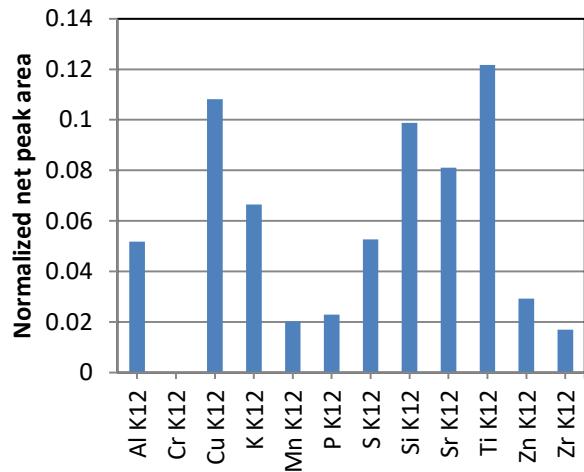


*din graficele de mai sus au fost omise valorile de Ca si Fe, care sunt elementele majoritare in spectru, pentru a se putea evidenta contributia elementelor in urme

P-st - 4 - pată culoare roșiatică



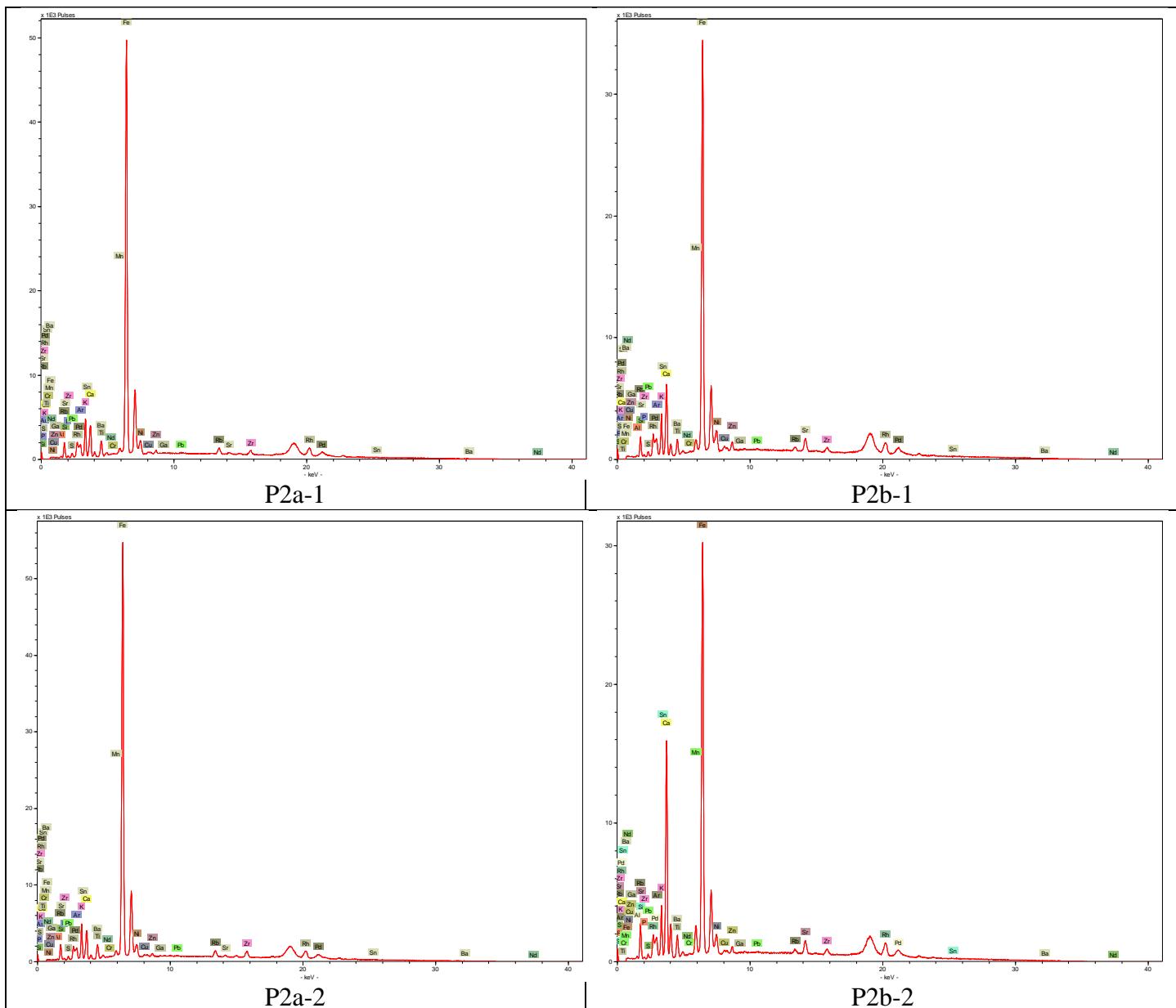
P-st - 4 - pată culoare roșiatică

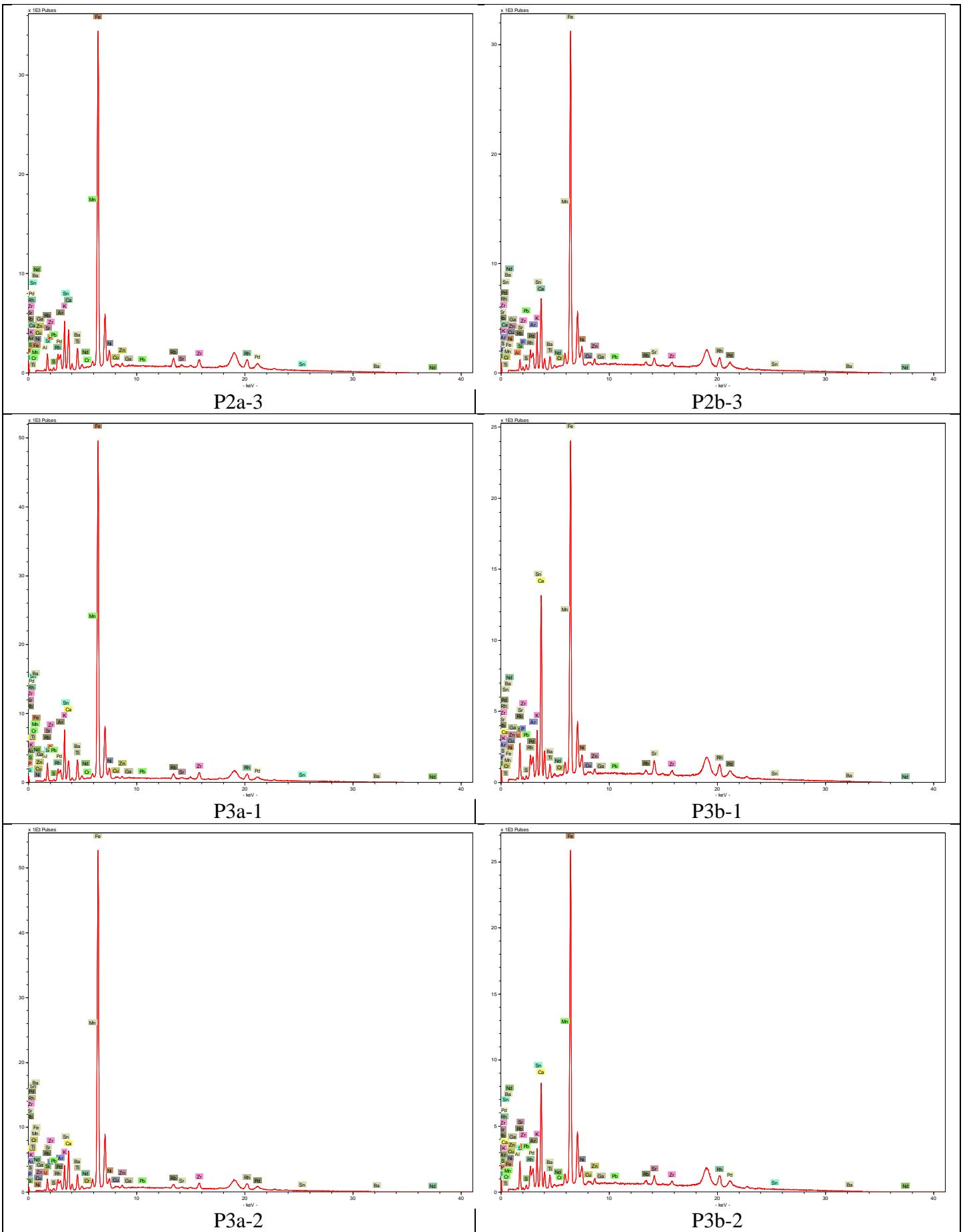


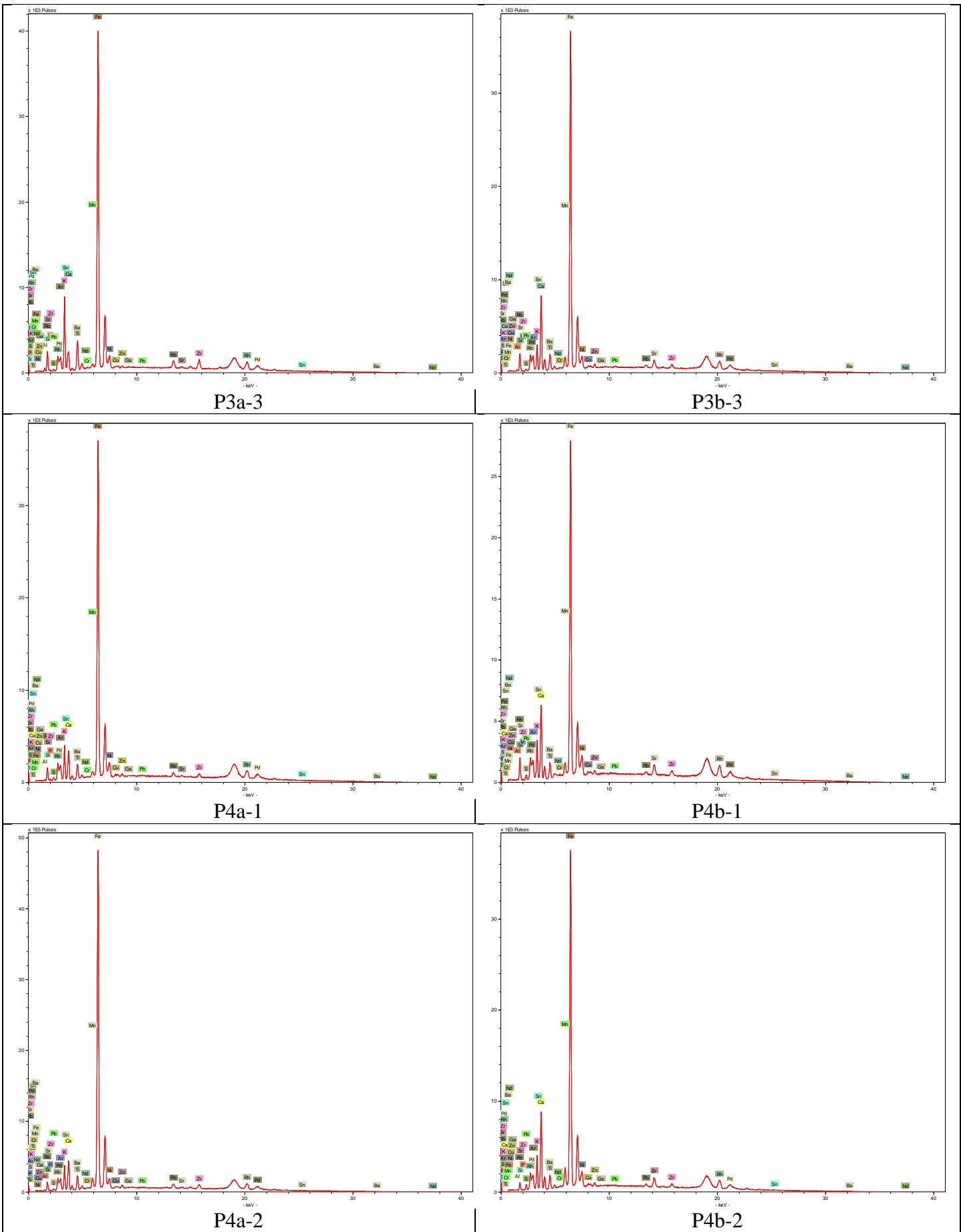
Pată de culoare roșiatică, masurată timp de 30 s

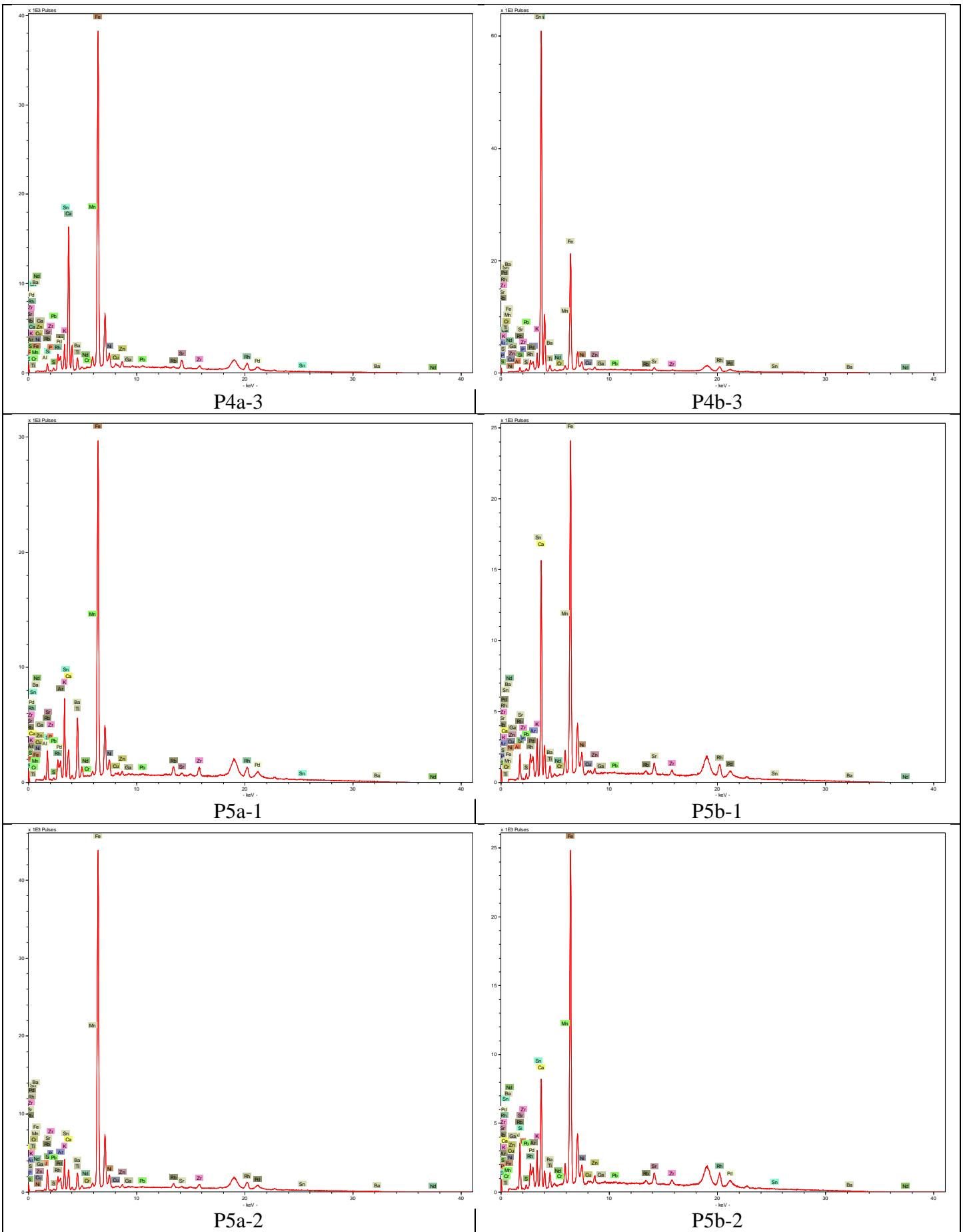
Gradina de piatra
- obiecte cu baza si parte superioara -

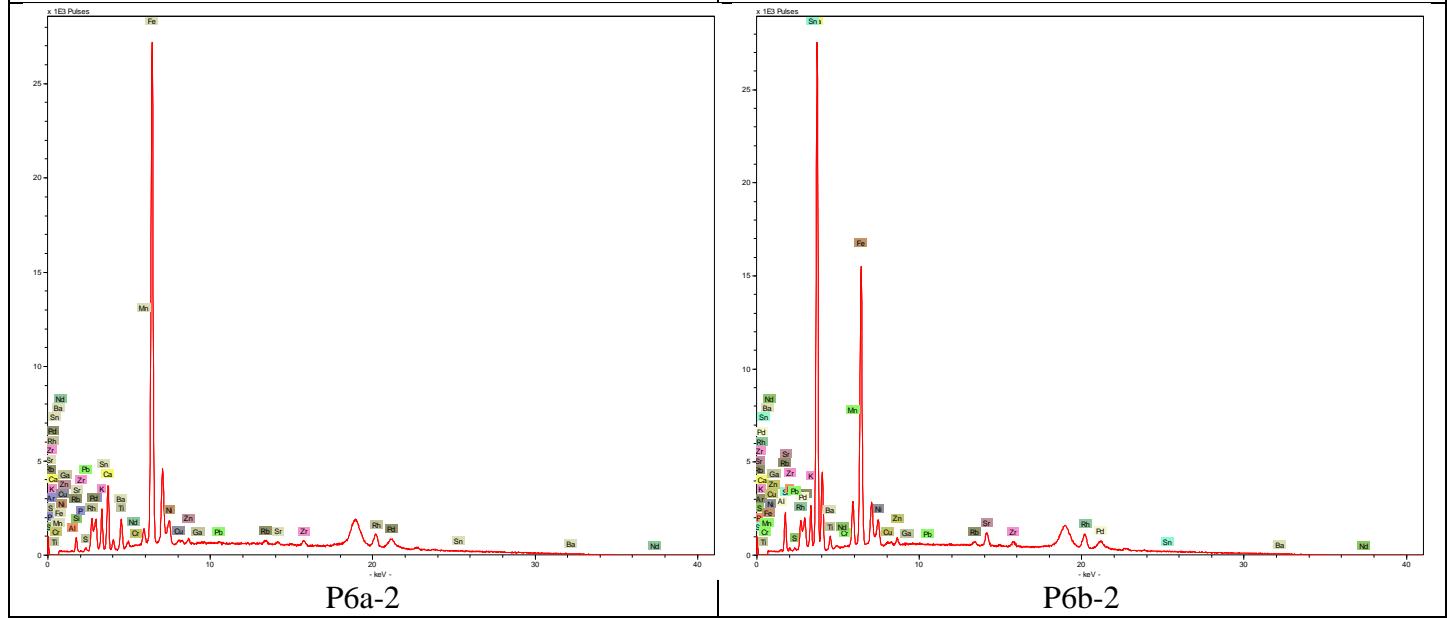
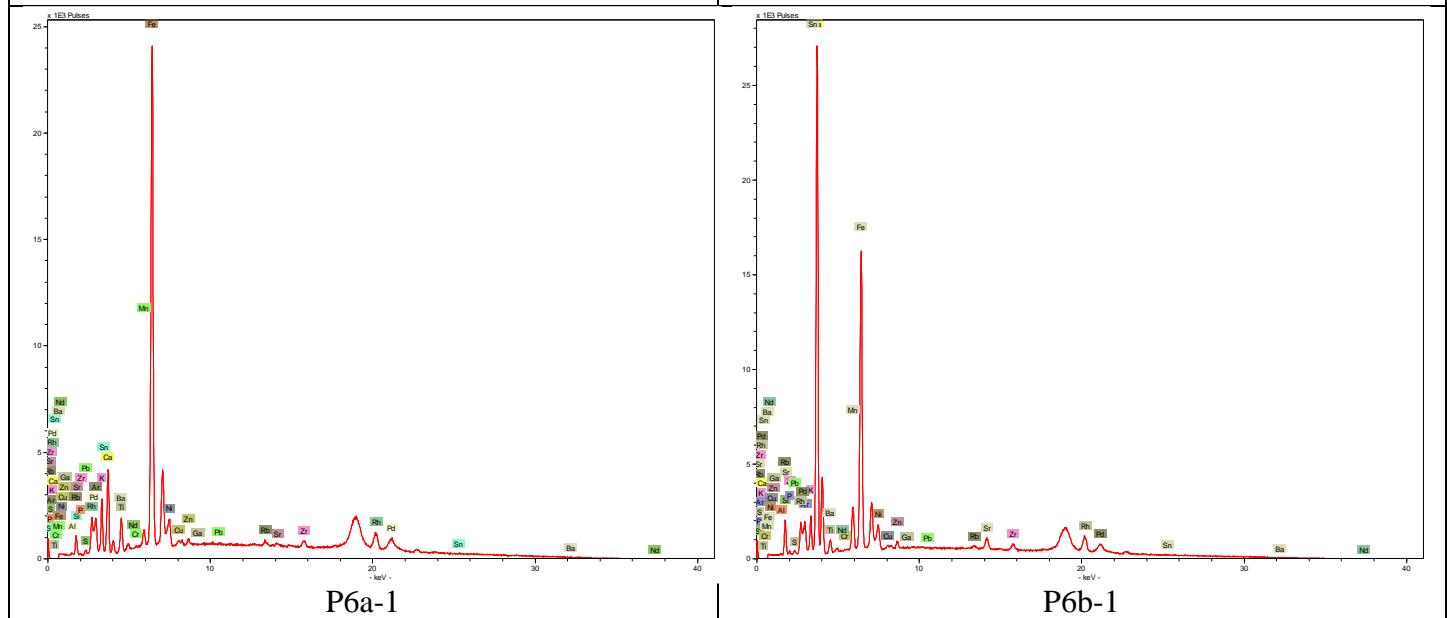
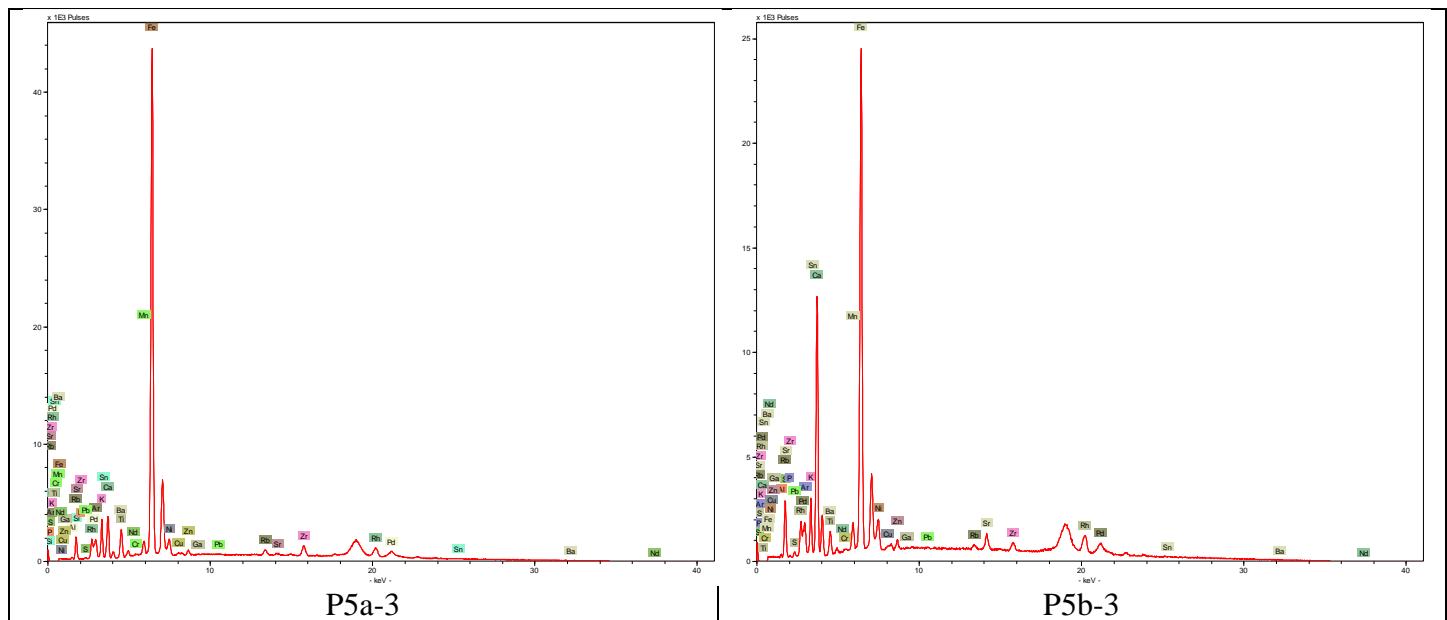
- Au fost analizate 6 obiecte, cu cate doua zone: baza (Pxa-1÷3) si obiectul in sine (Pxb1÷3), pentru fiecare zona realizandu-se cate trei masurari, a cate 30 sec.
- In general, bazele au mai mult Fe, Ti, Rb, Zr, uneori si K
- Obiectele au mai mult Ca si Sr
- Elemente comune: Al, Si, P, S, Ar, K, Ca, Ti, Mn, Fe, Ni, Rb, Sr, Rh, Pd, Pb, Zr, Nd (?)
- Dintre cele sase obiecte, P4b-3 are linii de Ca mult mai intense decat restul probelor, dar si cea mai mare intensitate a Rb
- Observatii din timpul analizelor:
 - P3b-2 – apparent mortar in partea de sus- ca si cand a fost asezat cu baza in sus
 - P4a-3, P4b-3 – pe mortar

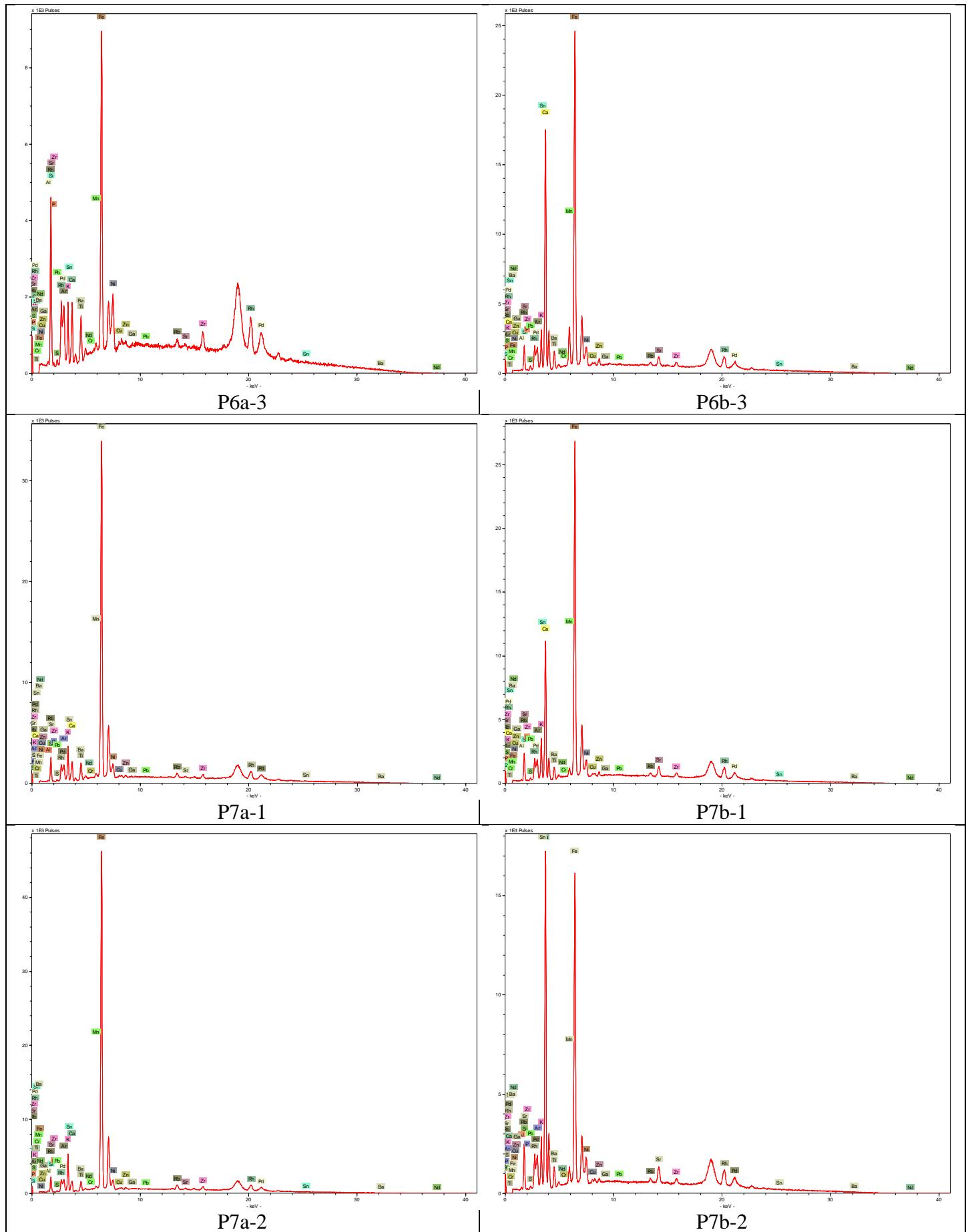


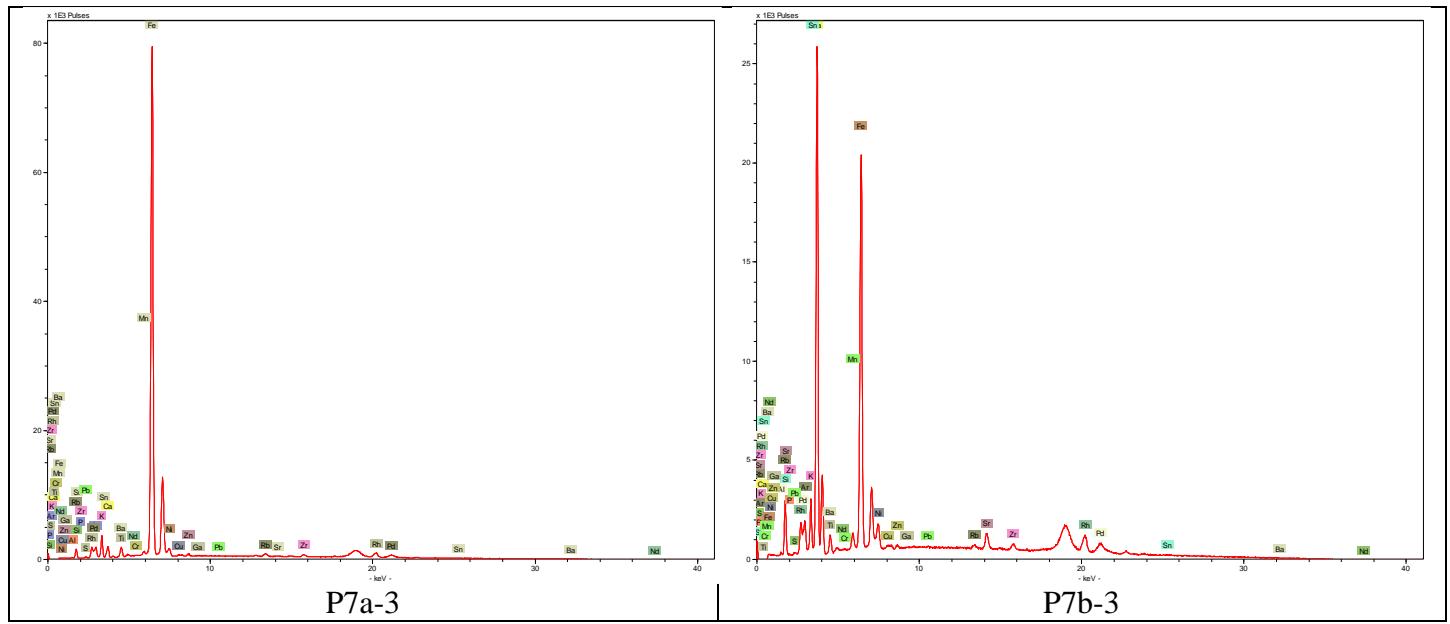






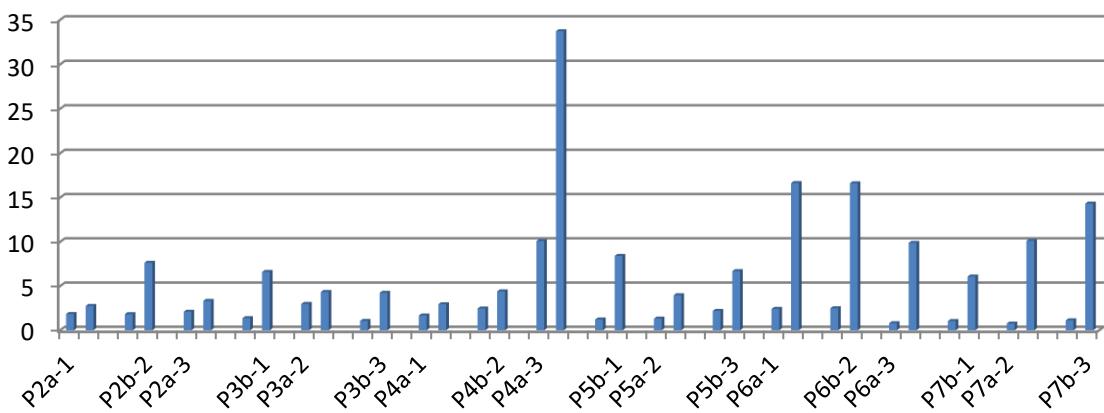




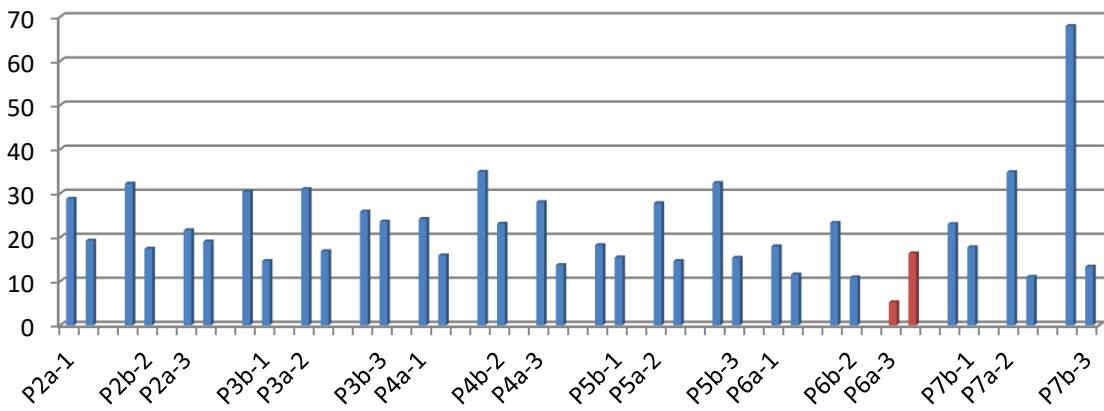


Grafice pe elemente

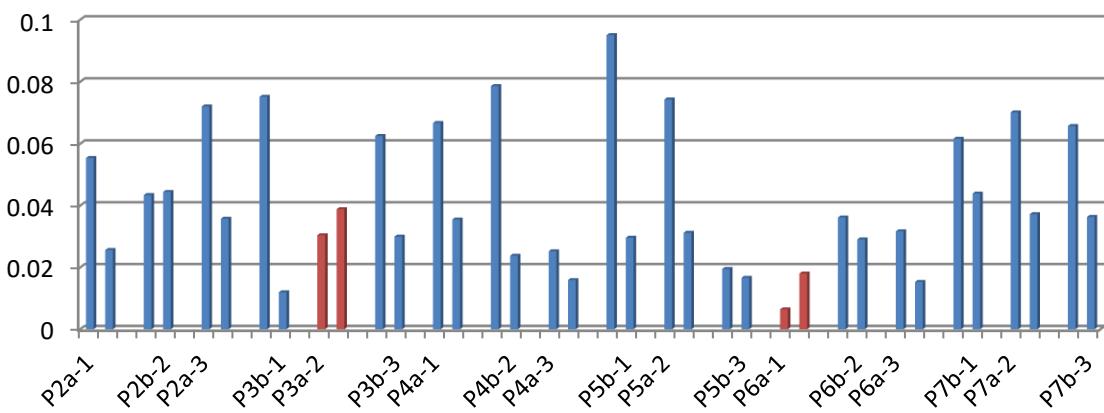
Ca K12



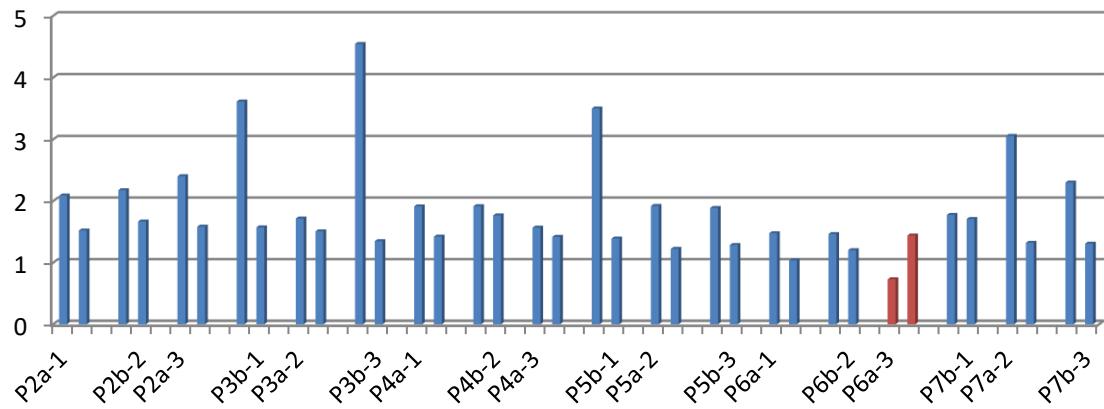
Fe K12



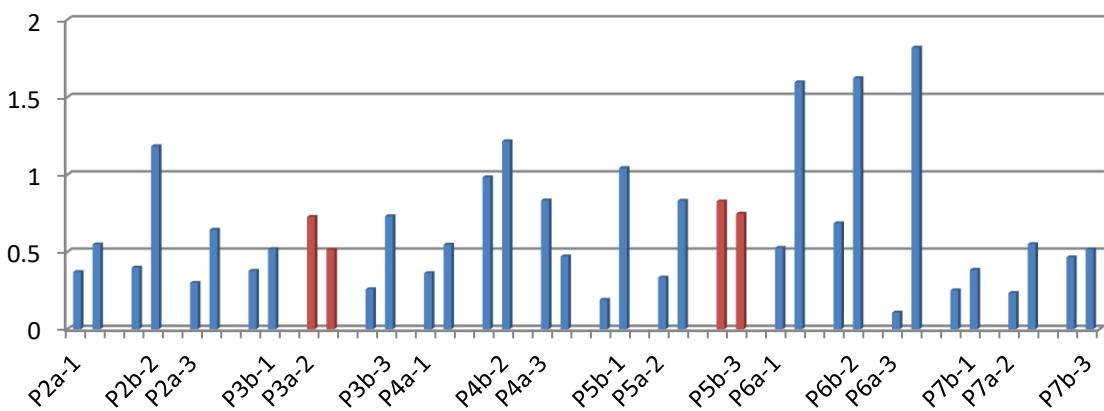
Ga K12



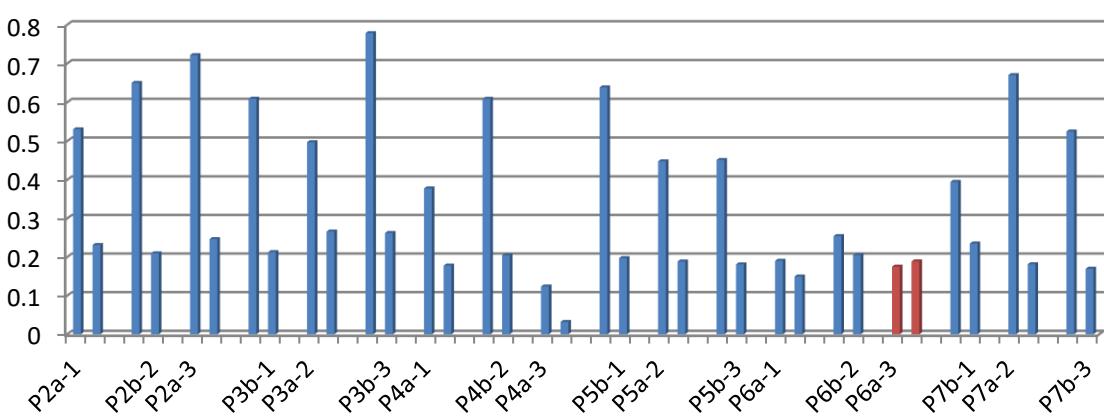
K K12



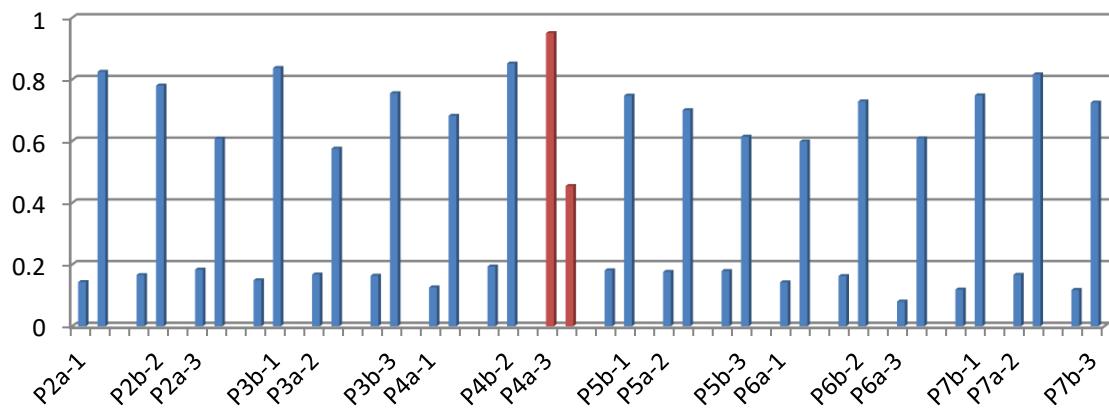
Mn K12



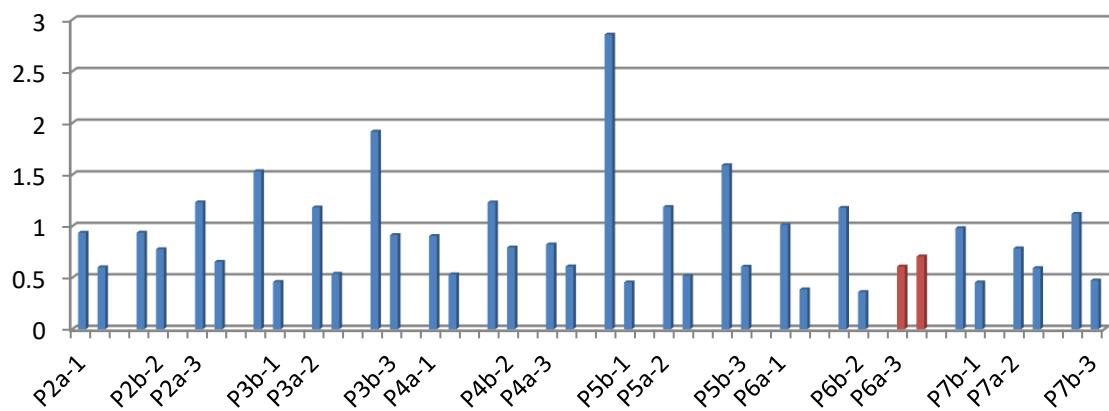
Rb K12



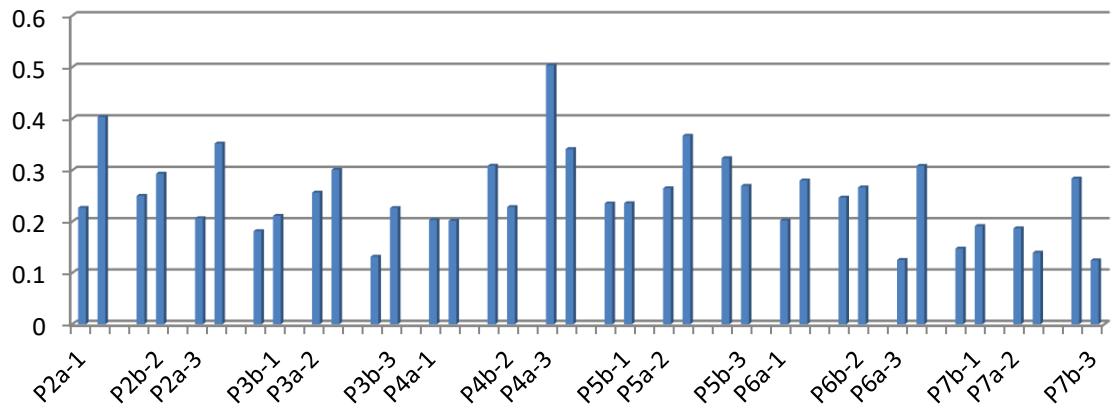
Sr K12



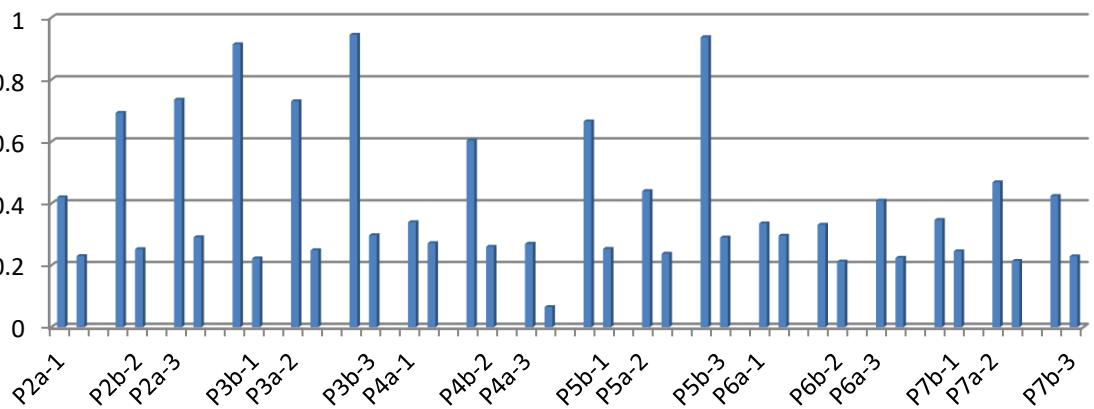
Ti K12



Zn K12



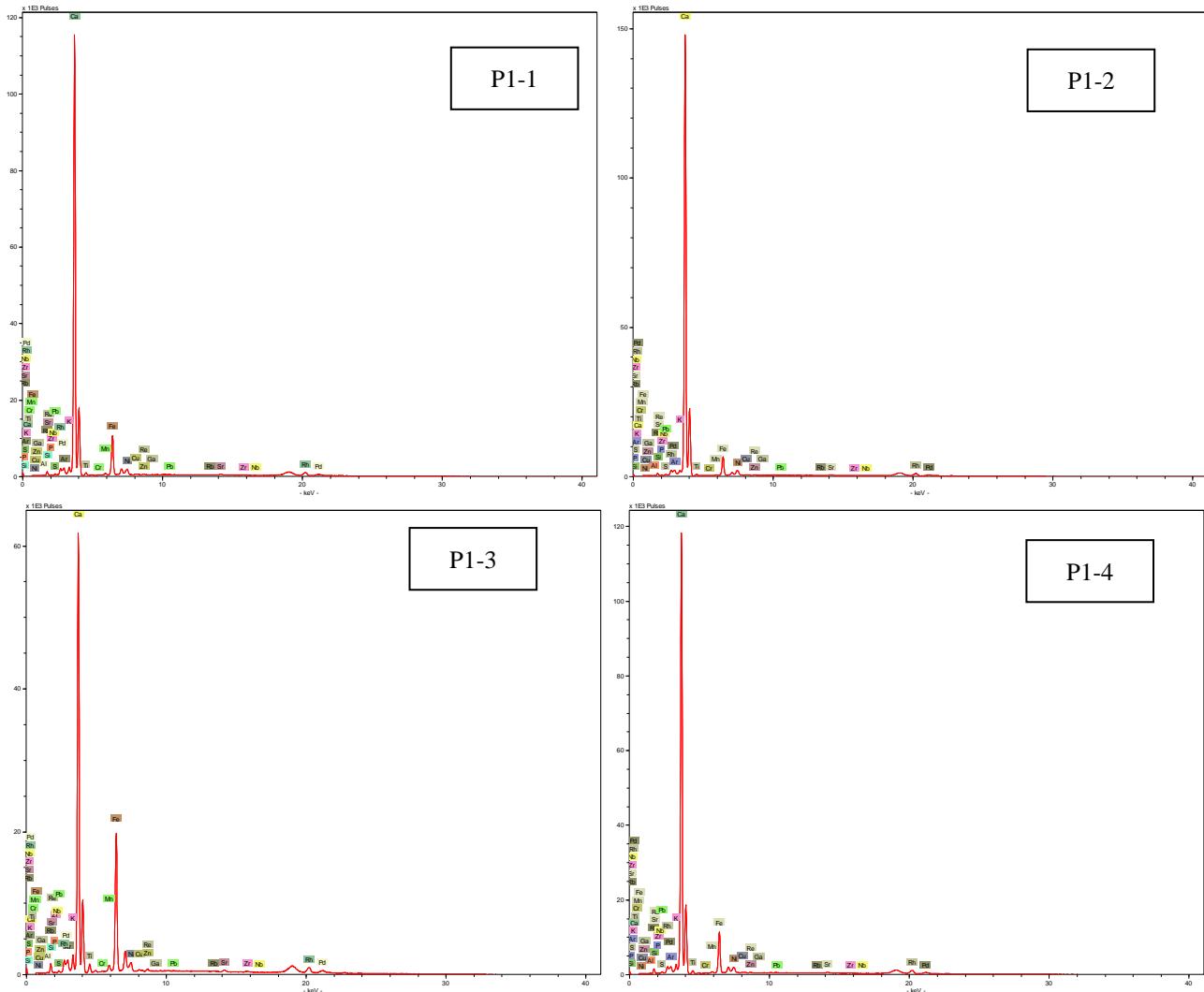
Zr K12

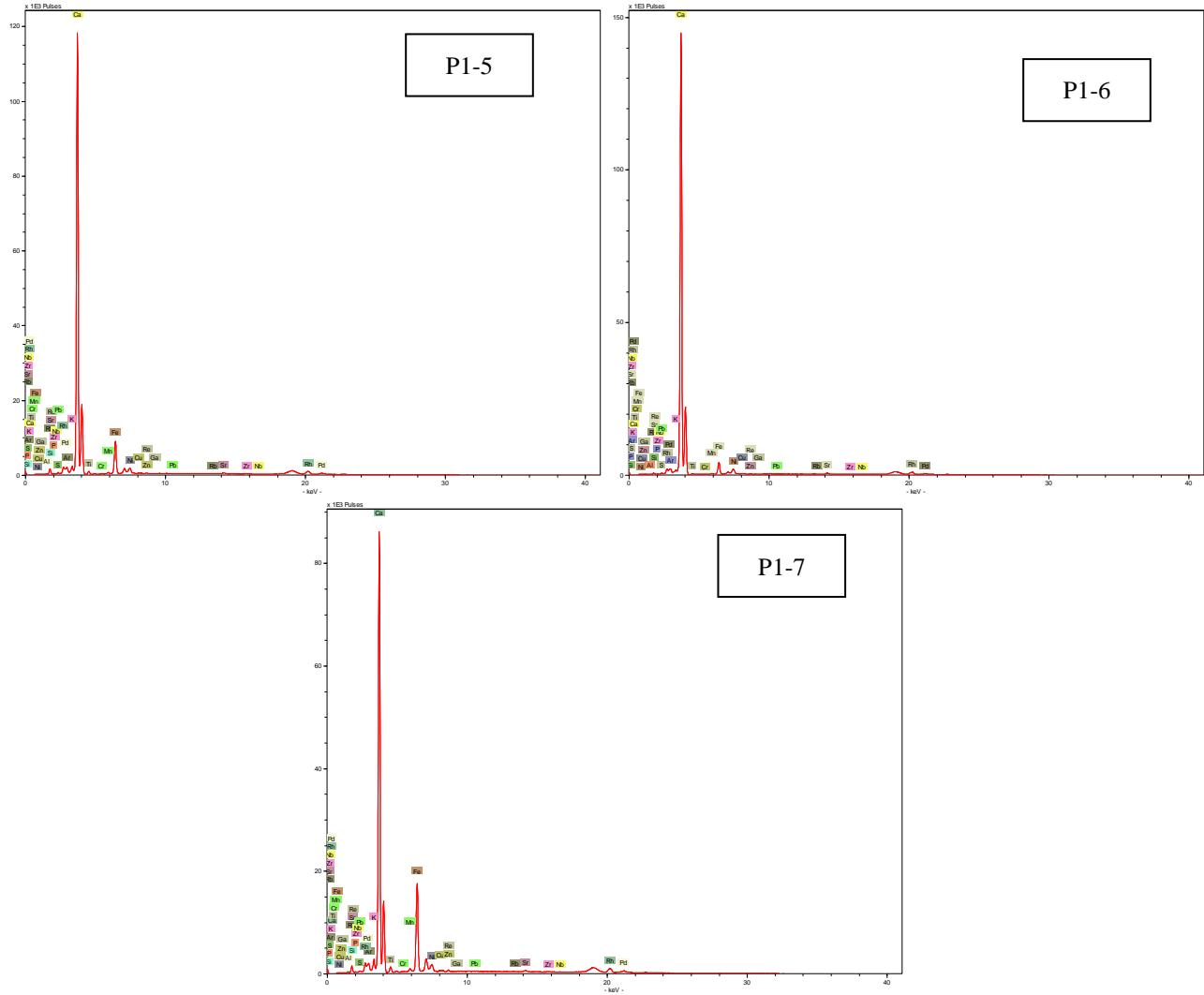


Gradina de piatra

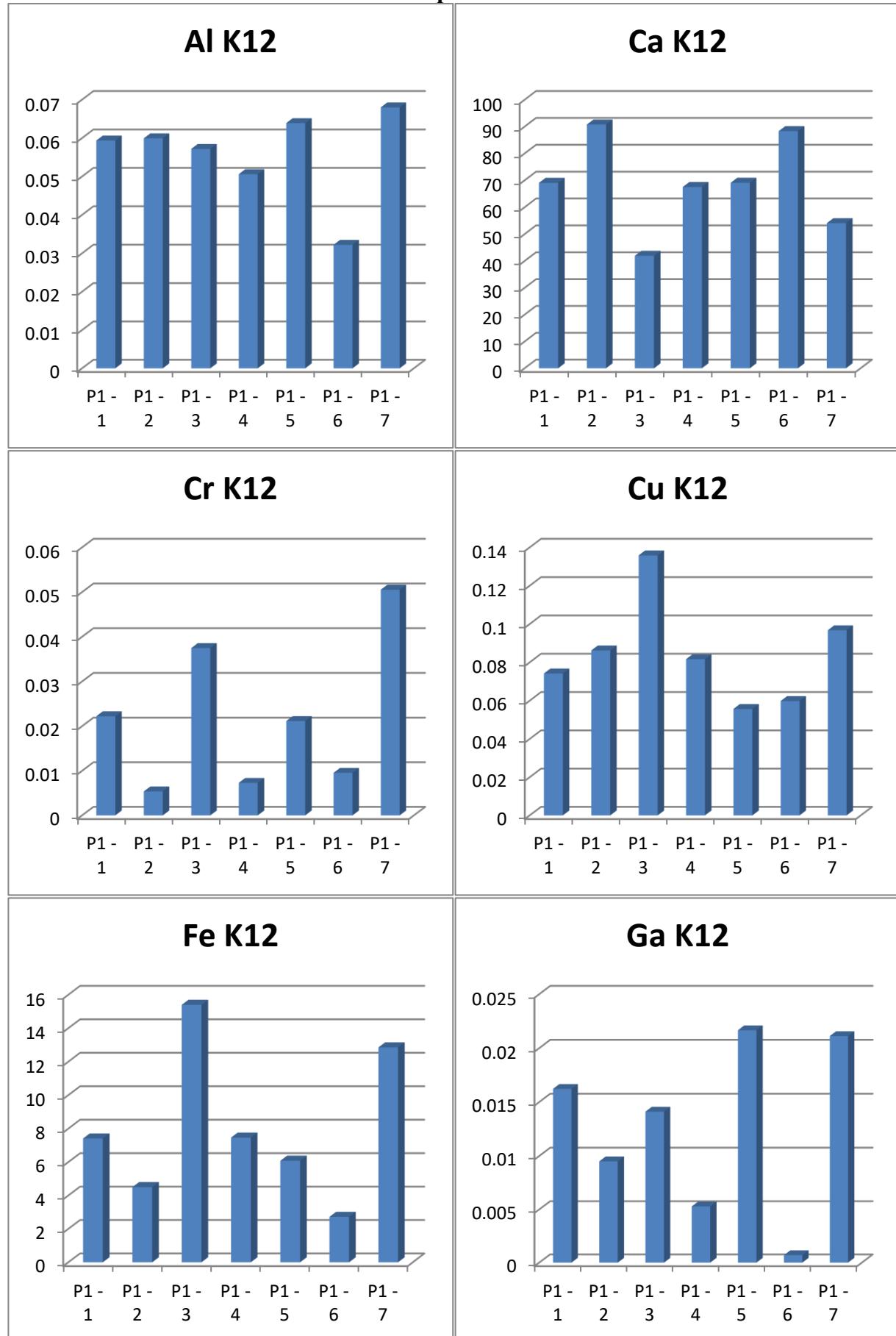
- masa -

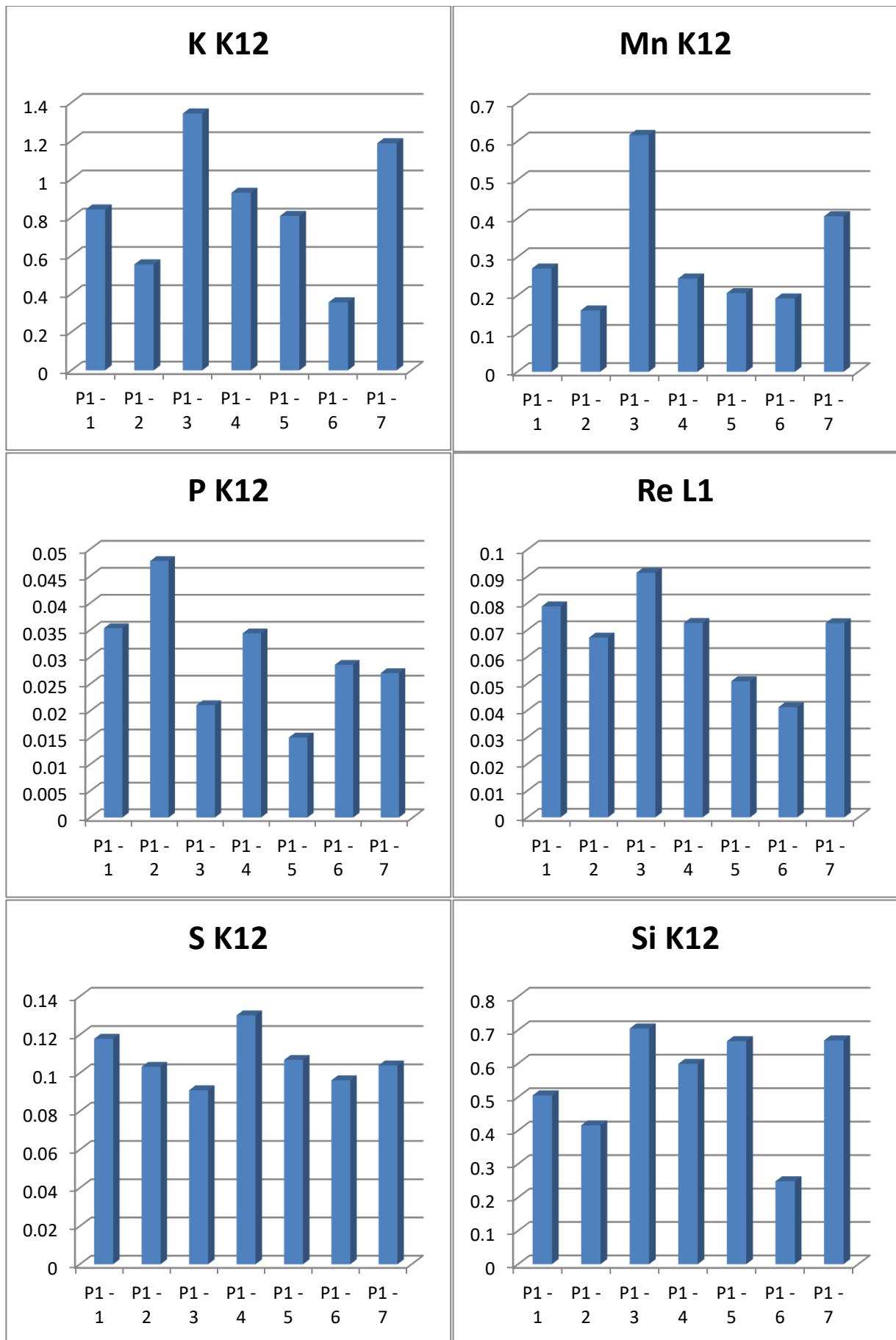
- Pentru proba P1 au fost realizate sapte masurari separate, a cate 30sec, in puncte diferite (P1-1÷7); punctele P1-2 si P1-7 au fost masurate si timp de 60 sec.
- P1-1 si P1-2 nu prezinta linii de Rb
- P1-3 si P1-7 au cele mai mari valori de Cu, Fe, K, Mn, Cr, Ti, Zn, Rb, Re
- Pentru toate probele, Al, Ar, Sr sunt aproape constante

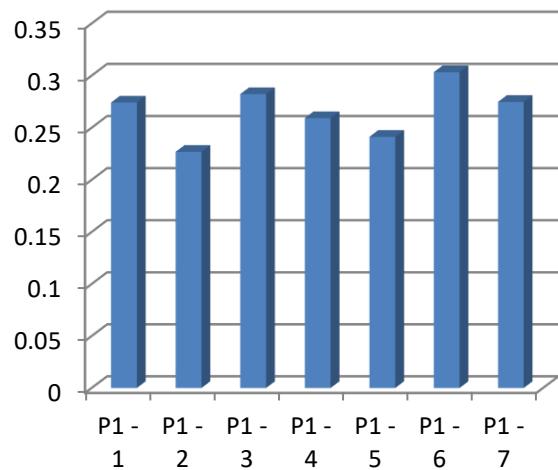
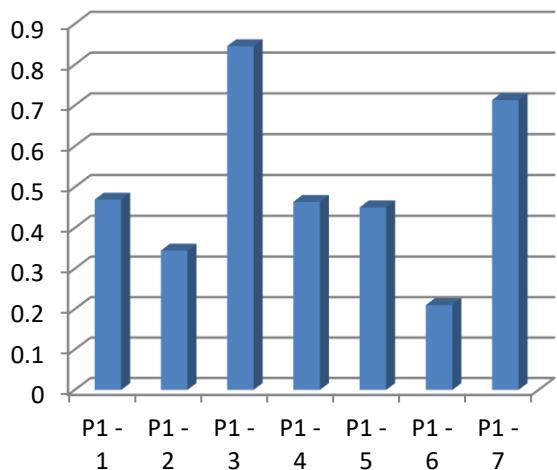
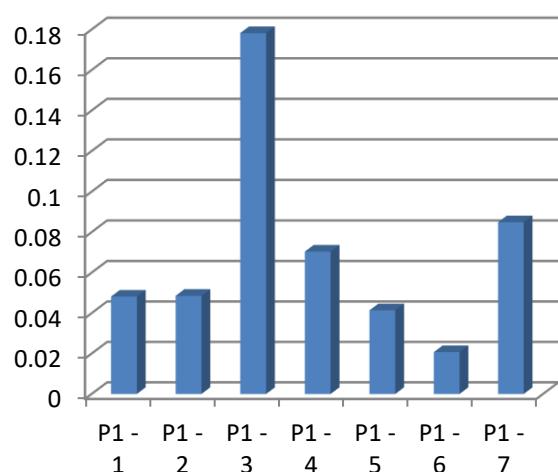
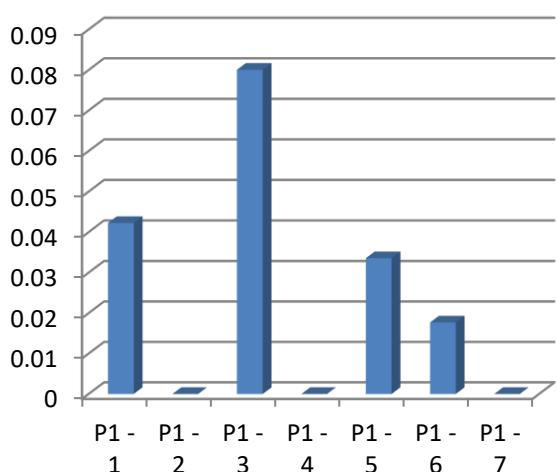
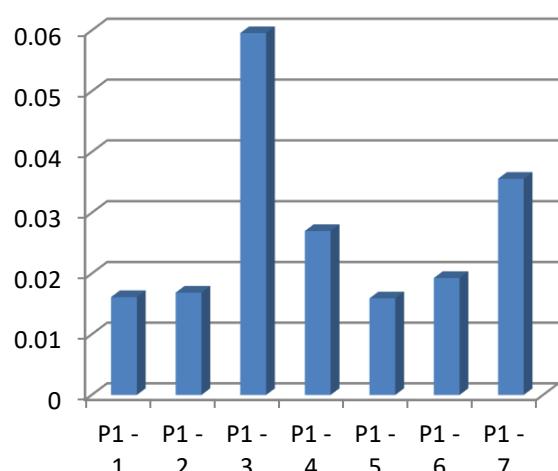
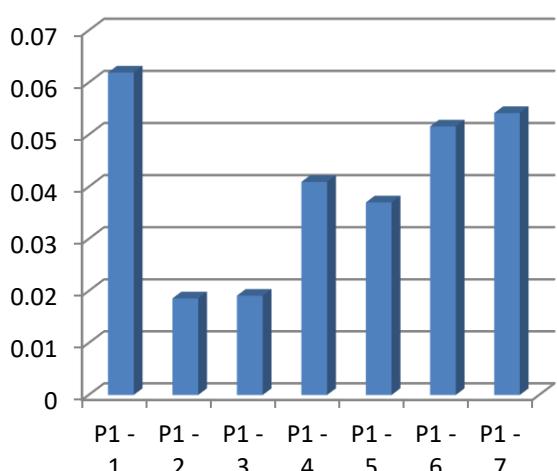




Grafice pe elemente

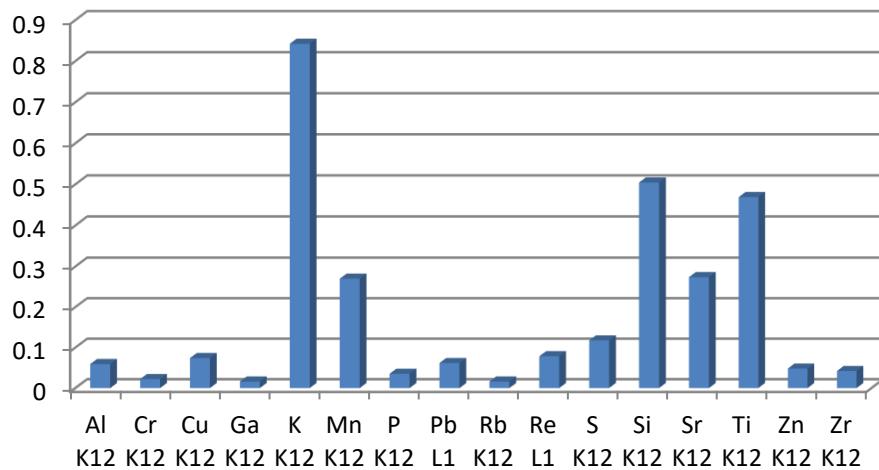




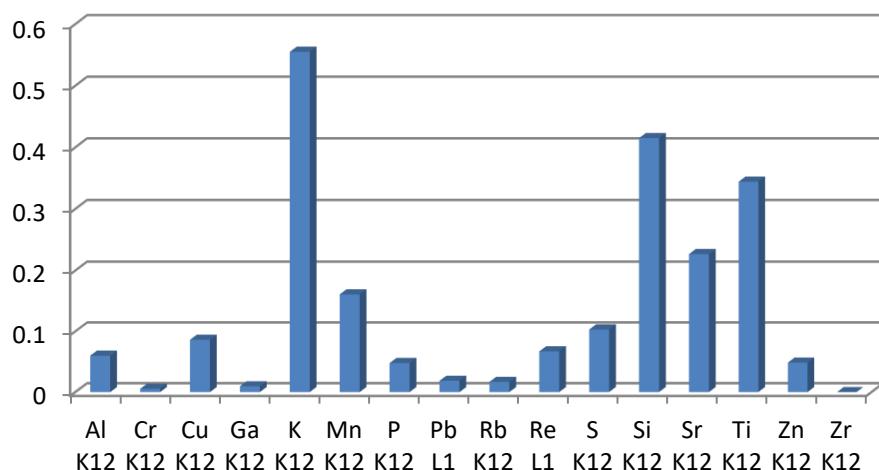
Sr K12**Ti K12****Zn K12****Zr K12****Rb K12****Pb L1**

Grafice pentru fiecare punct de masurare*

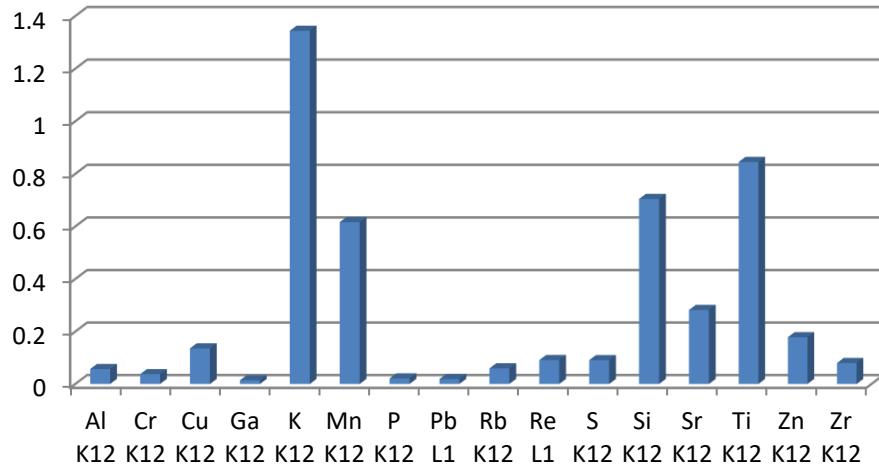
P1 - 1



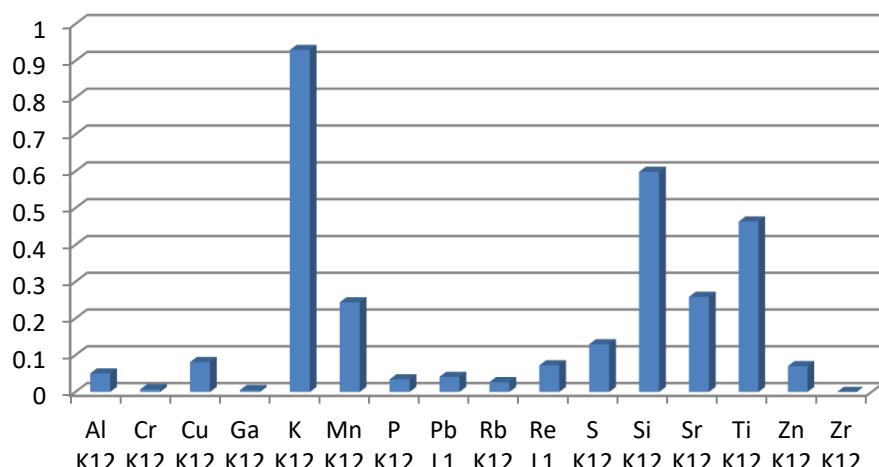
P1 - 2



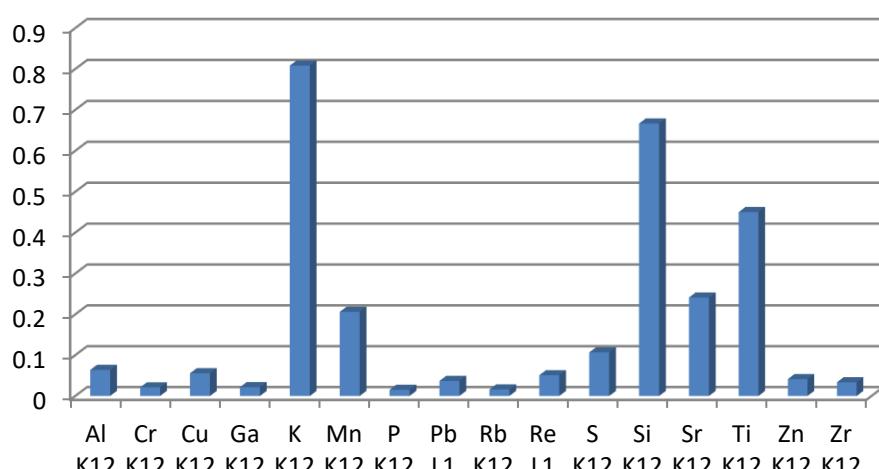
P1 - 3



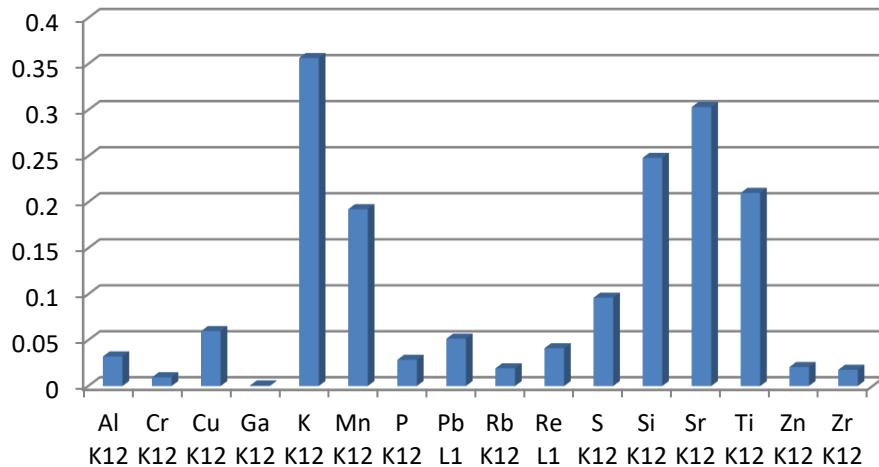
P1 - 4



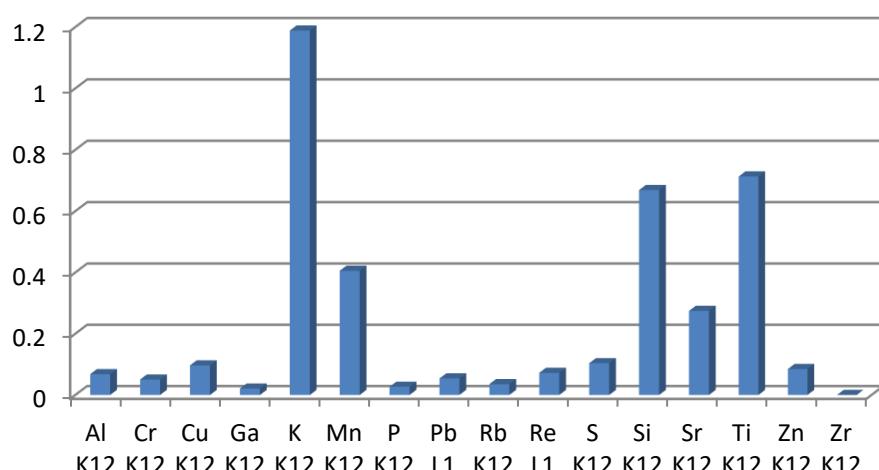
P1 - 5



P1 - 6



P1 - 7

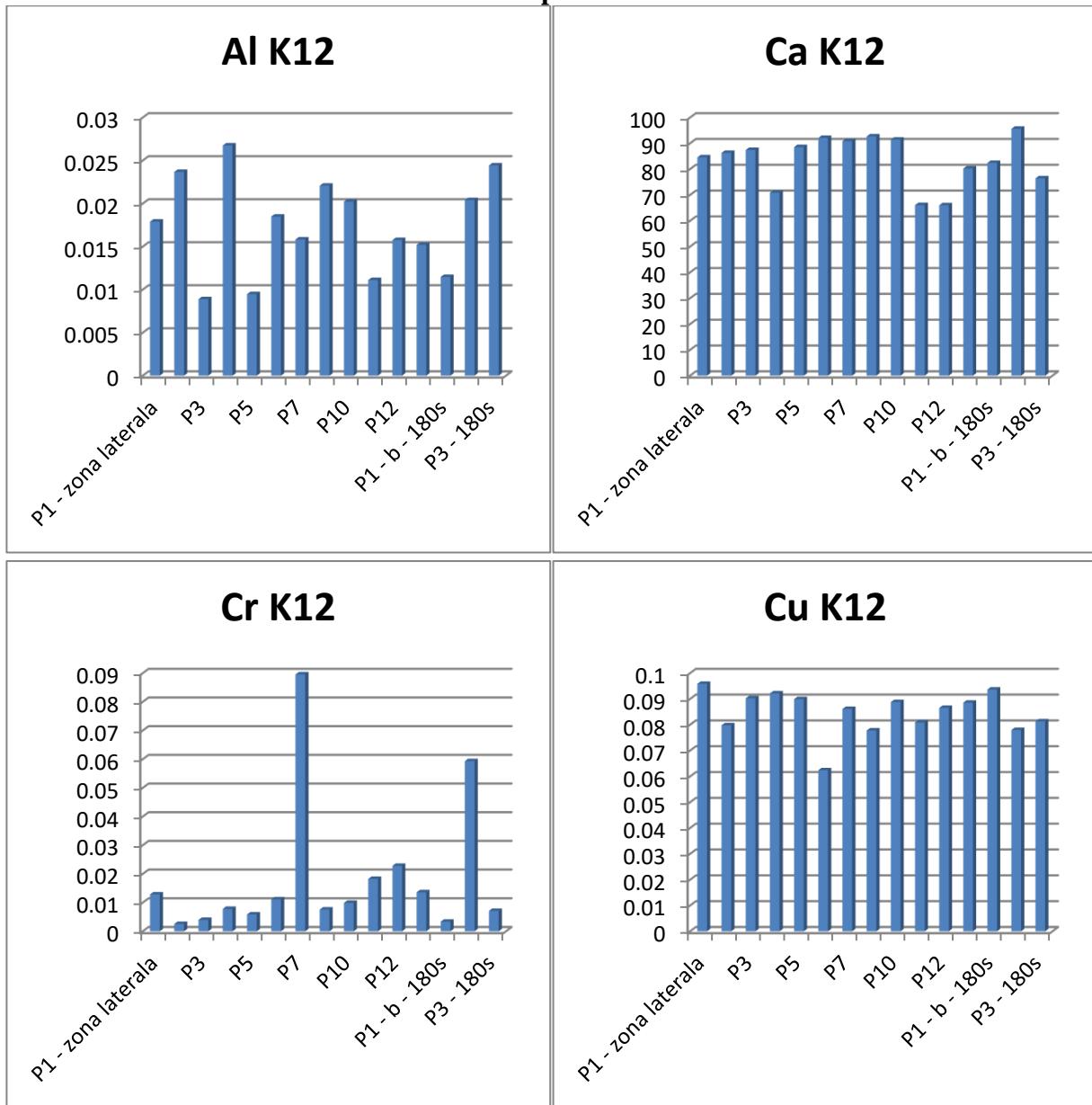


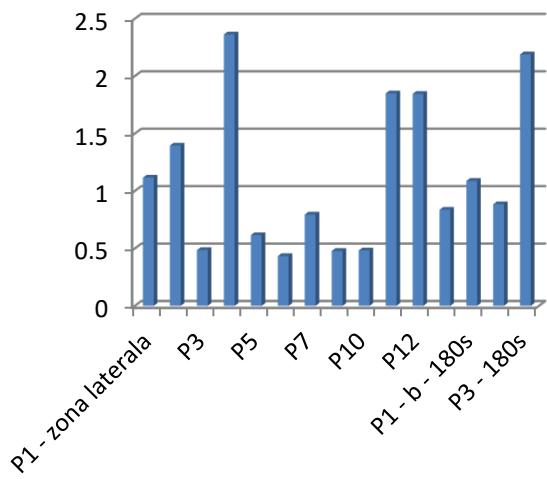
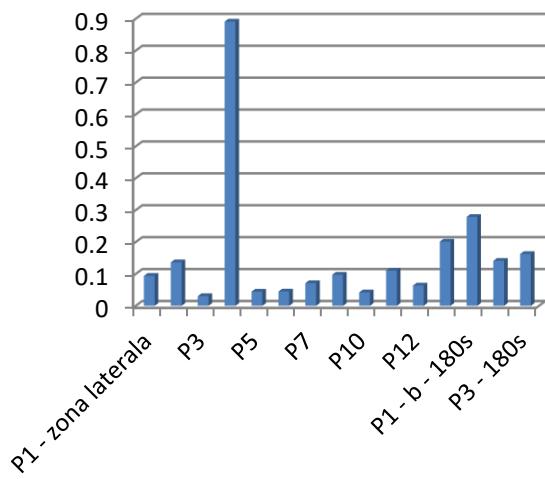
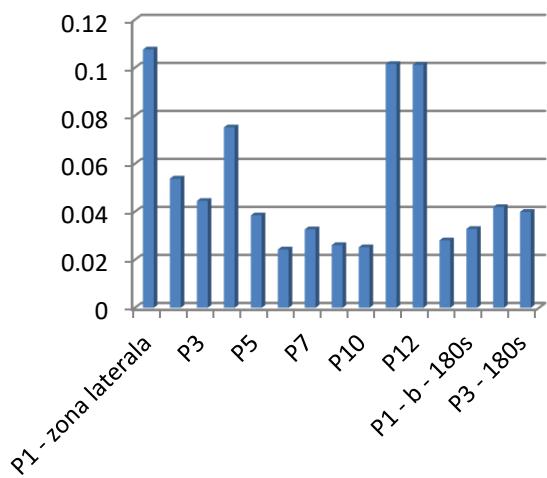
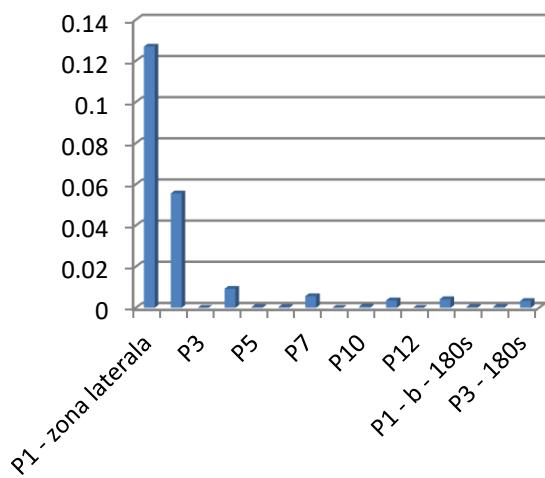
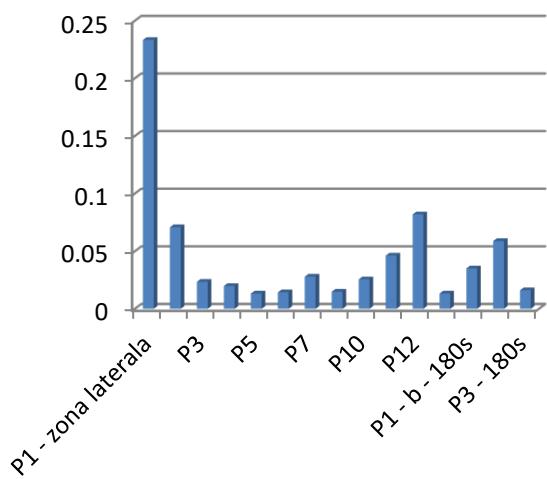
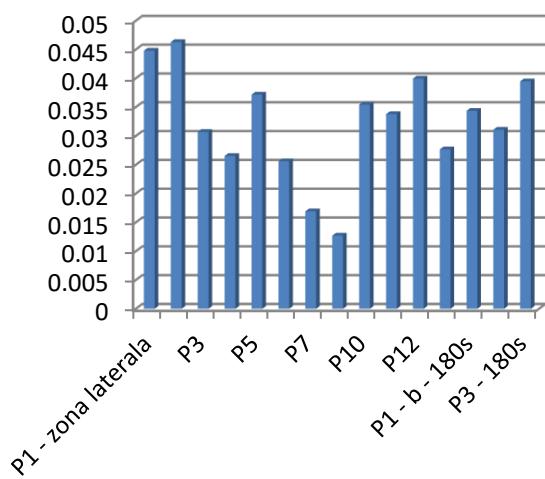
*au fost omise liniile de Ca si Fe, pentru a se putea evidenția contribuția elementelor în urme

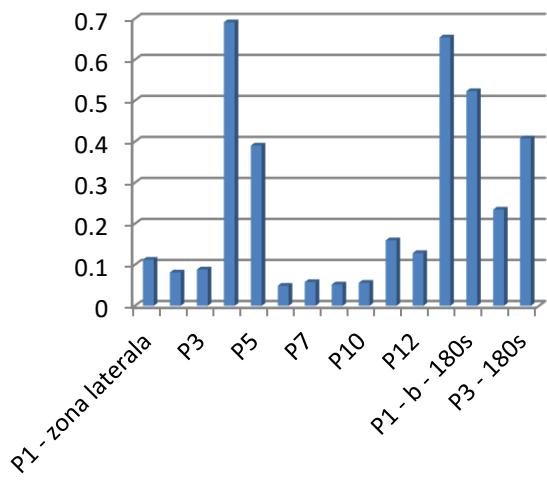
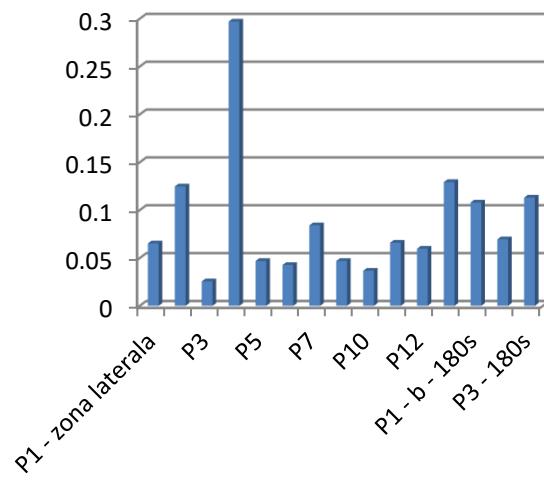
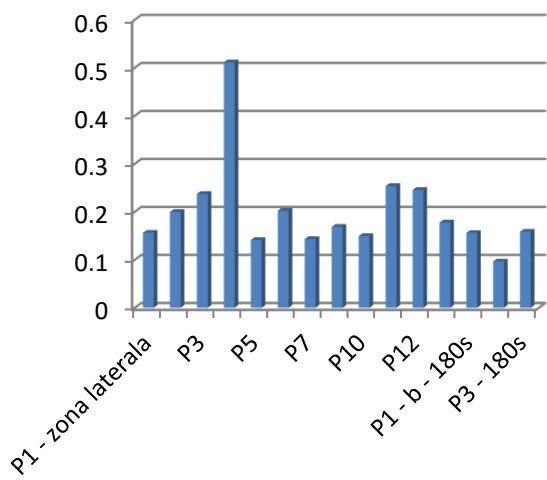
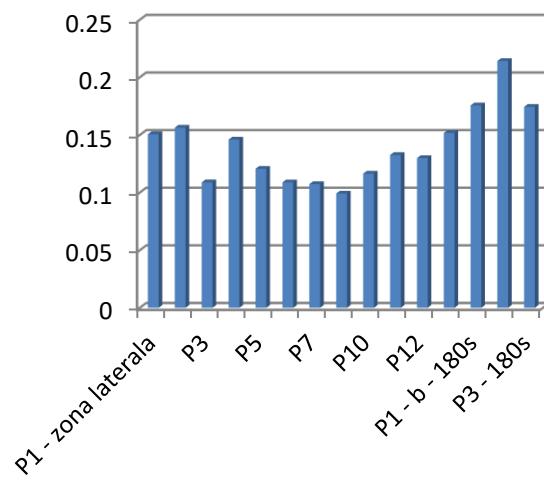
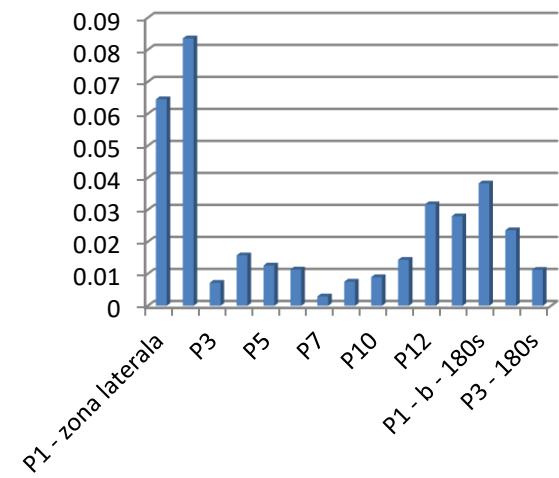
Poarta Sarutului

- Analize realizate in 15 puncte
- Ca si Fe sunt elementele dominante in spectre
- Exista diferente intre puncte la nivelul liniilor de Cr (la nivel de urme, dar mai intense in P7 si P2-180s), Fe (mai intens in P4, P3-180s, P11, P12, P2-zona laterala si P1-zona laterala), K (in urme, dar foarte vizibil in P4), Mn (cel mai intens in P1-zona laterala, P4, P11 si P12), P (vizibil in P1-zona laterala si P2-zona laterala, iar in restul probelor, nu), Pb (apare in P1-zona laterala si P2-zona laterala), S (cel mai intens in P4, P1-180s, P1-b-180s, P5, P3-180s si P2-180s), Si (in punctele P4, P2-zona laterala, P1-180s), Sr (cel mai intens in P4) si Zn (mai intens in P2-zona laterala si P1-zona laterala)

Graficele pe elemente

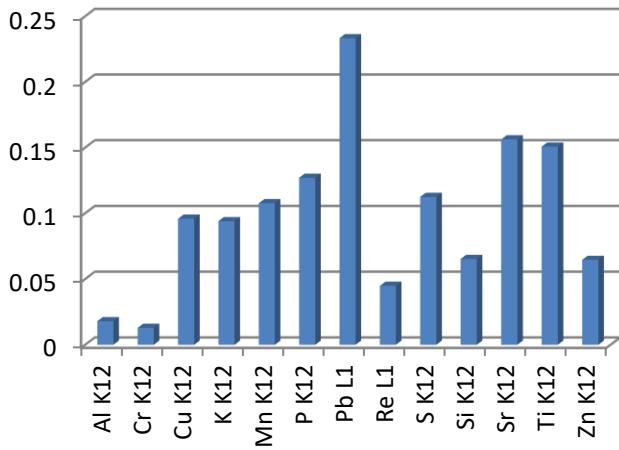


Fe K12**K K12****Mn K12****P K12****Pb L1****Re L1**

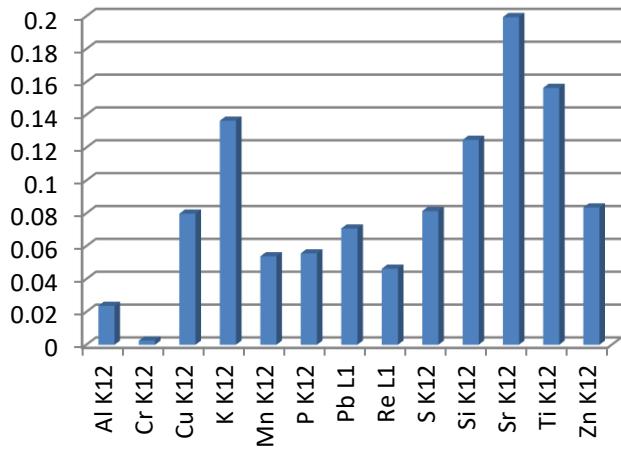
S K12**Si K12****Sr K12****Ti K12****Zn K12**

Grafice pentru fiecare punct de masurare*

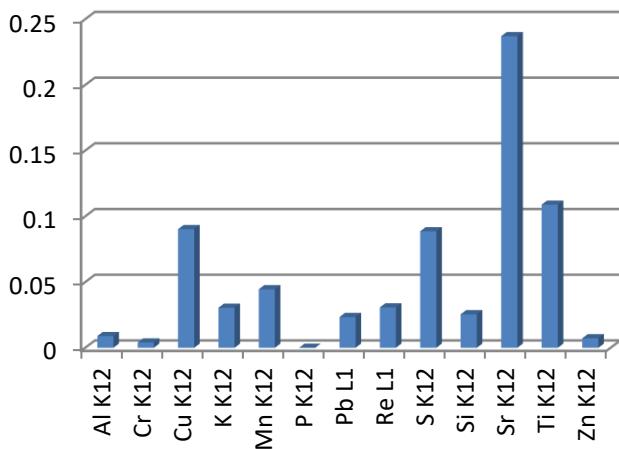
P1 - zona laterală



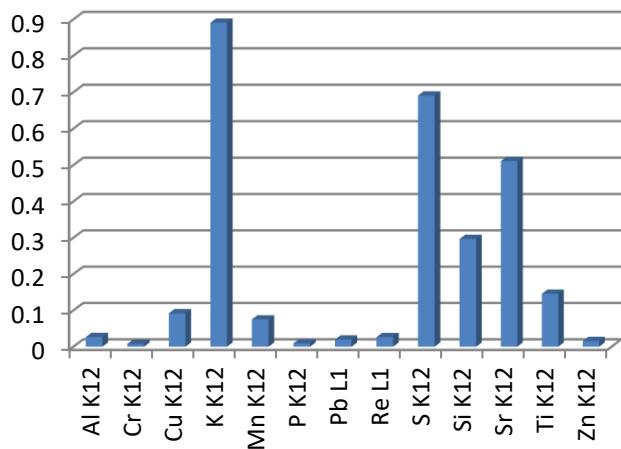
P2 - zona laterală



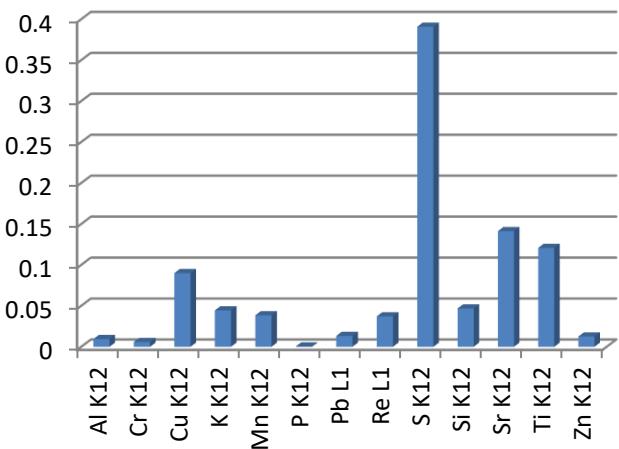
P3



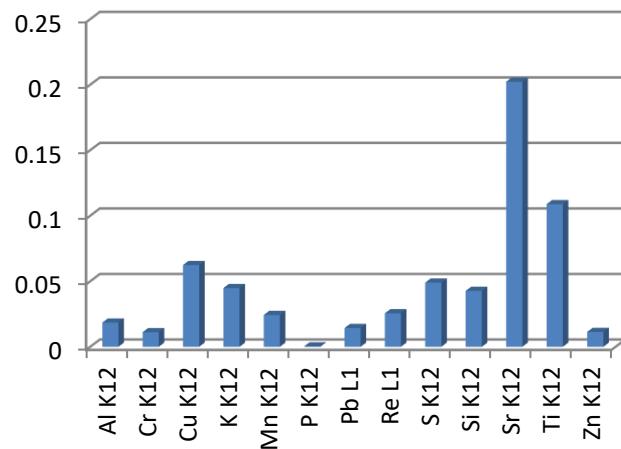
P4

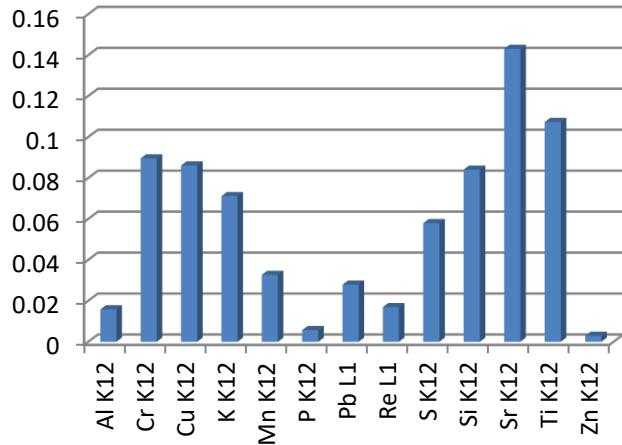
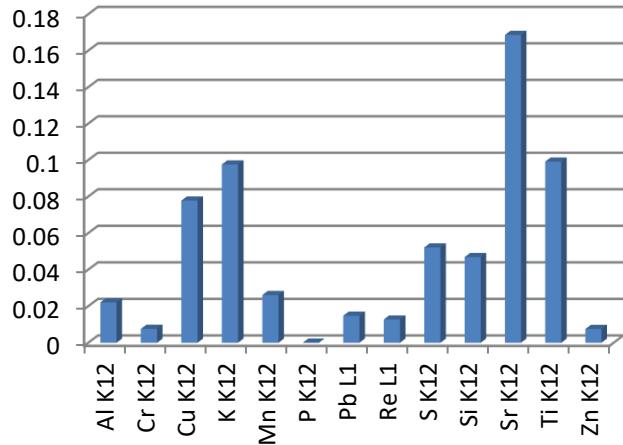
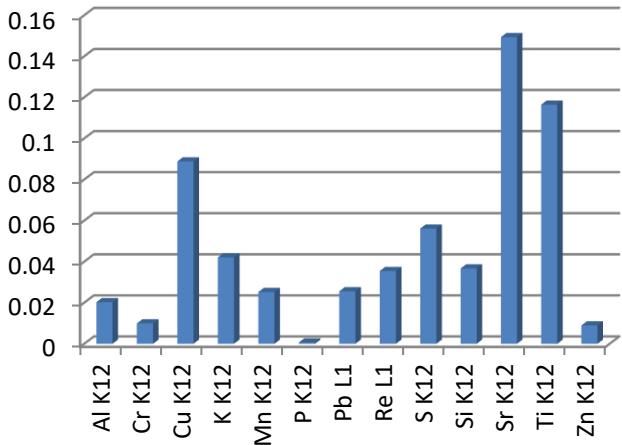
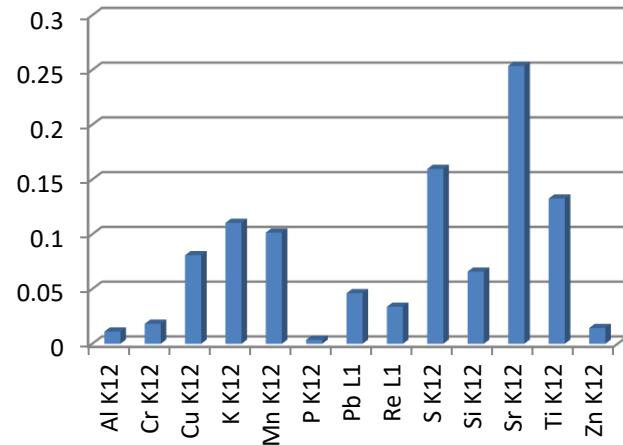
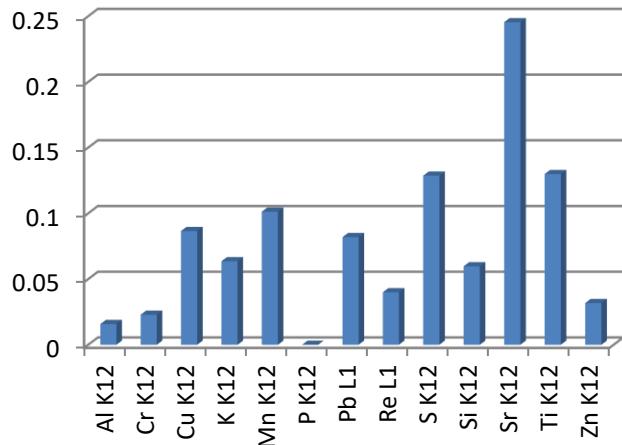
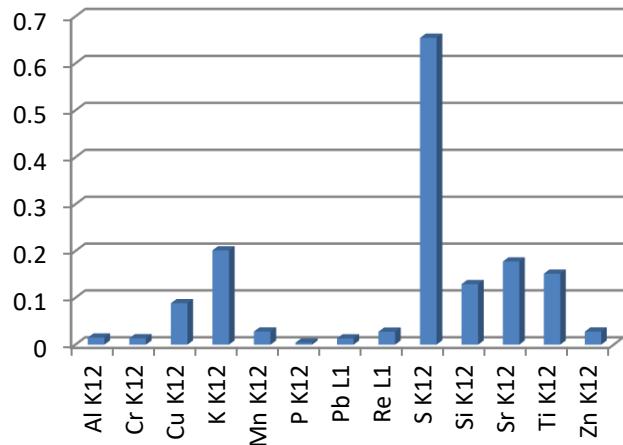


P5

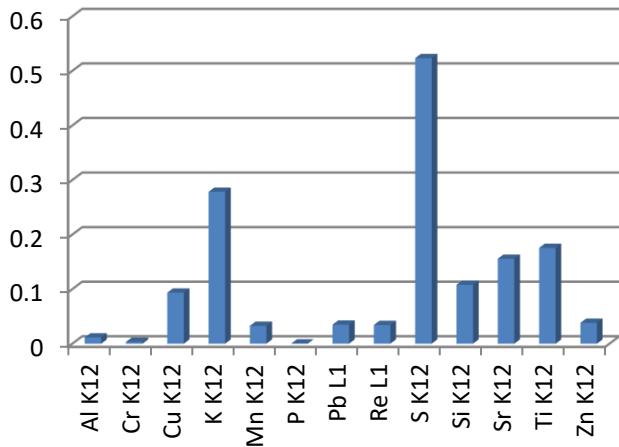


P6

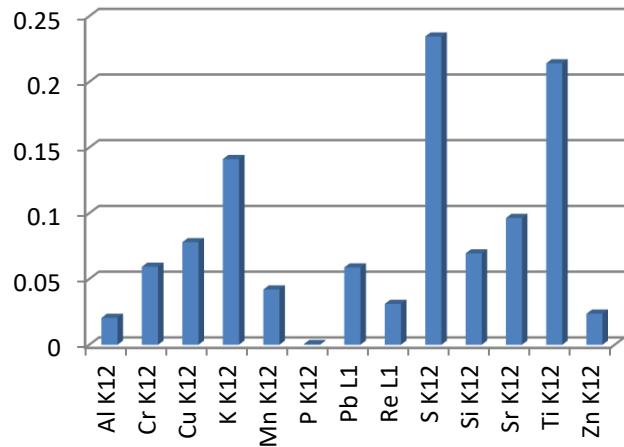


P7**P9****P10****P11****P12****P1 - 180s**

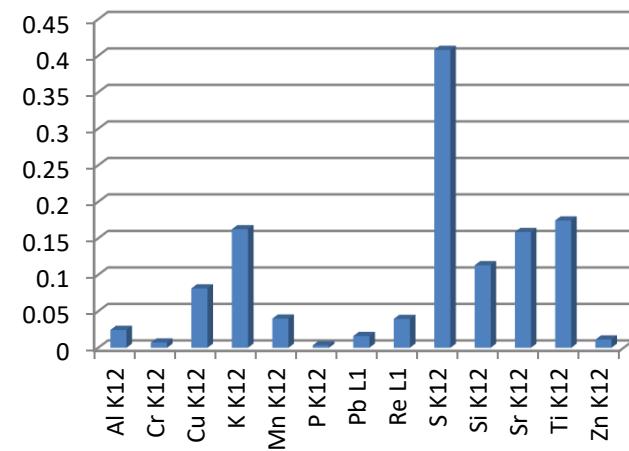
P1 - b - 180s



P2 - 180s



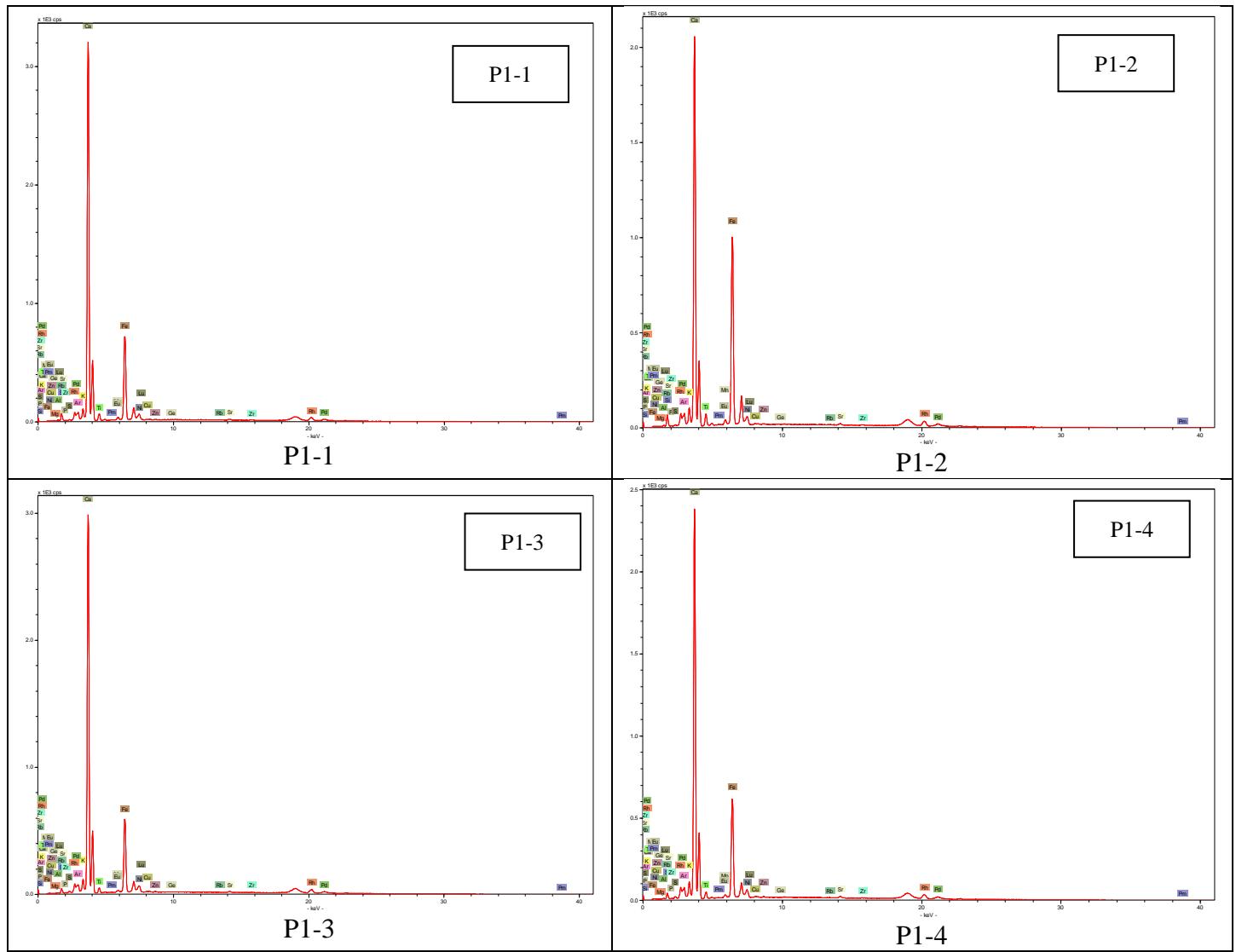
P3 - 180s

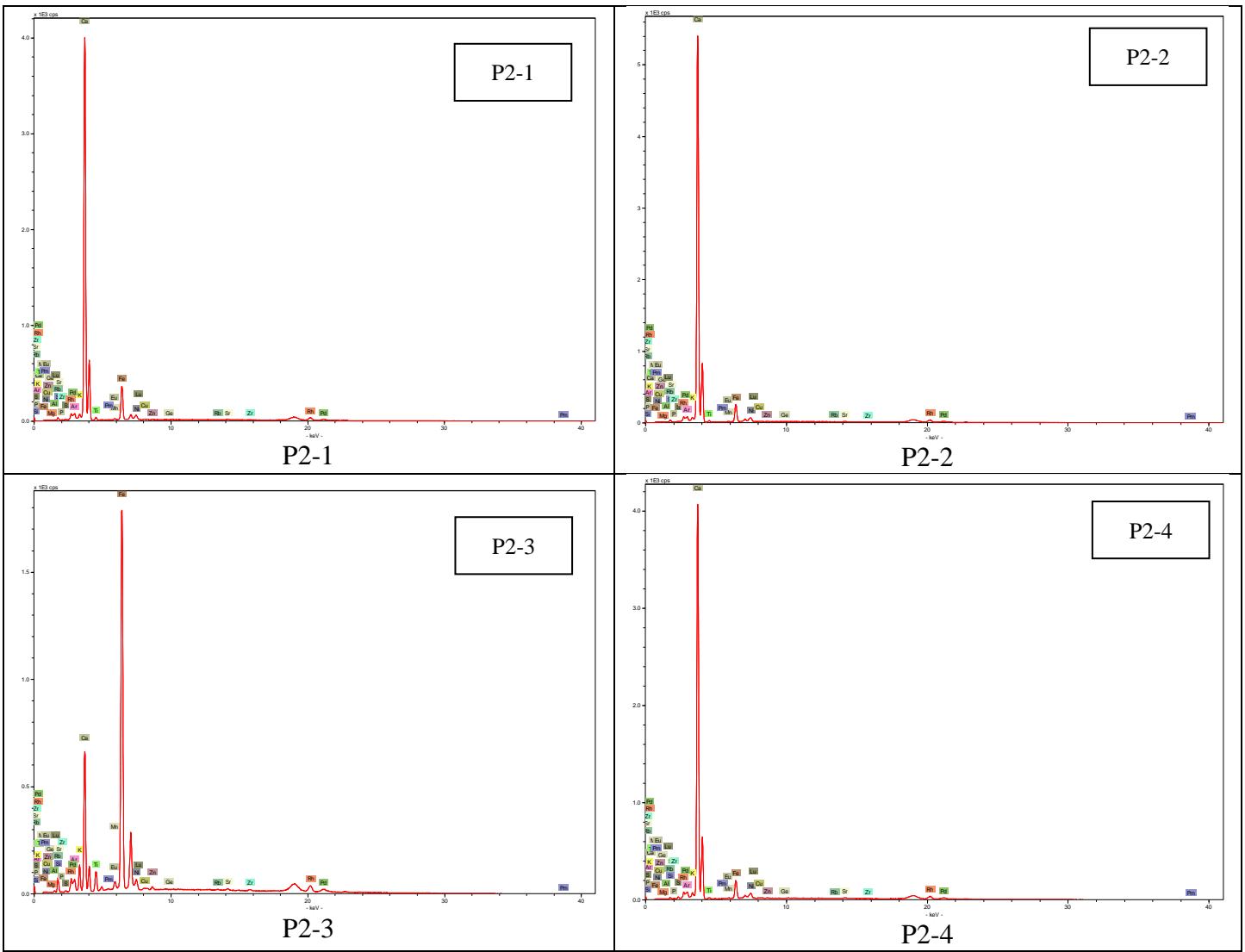


*au fost omise liniile de Ca si Fe, pentru a se putea evidenția contribuția elementelor în urme

Blocurile de piatra

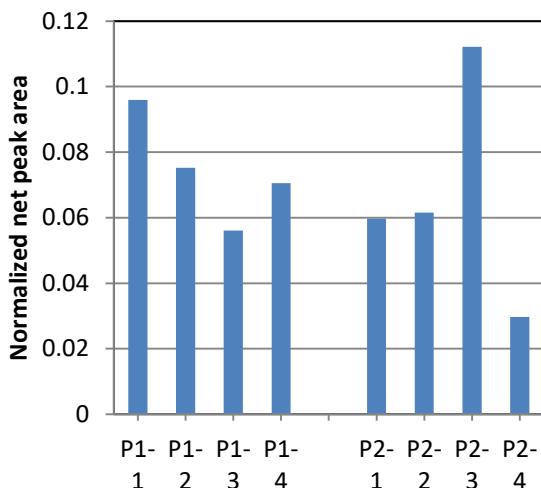
- Analize realizate pe 2 blocuri de piatra, cate patru puncte diferite pentru fiecare bloc
- Ca este elementul dominant in spectre, iar Fe este element minoritar. Elementele in urme evidențiate sunt: Al, Si, P, S, K, Ti, Mn, Cu, Zn, Rb, Sr, Zr
- Pentru blocul de piatra 2, punctul 3 pare a fi diferit de restul, in sensul ca prezinta intensitate mai mare a Fe decat a Ca. de asemenea, in acest punct s-au detectat intensitati mai mari ale Zn, Zr, Ti, SI, Rb, Mn, K, Cu fata de restul punctelor analizate



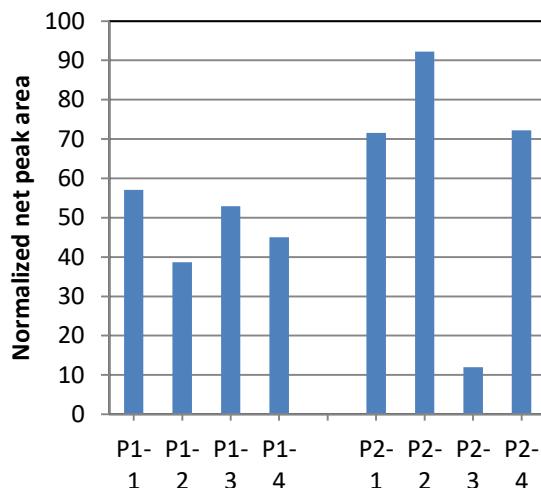


Graficele pe elemente

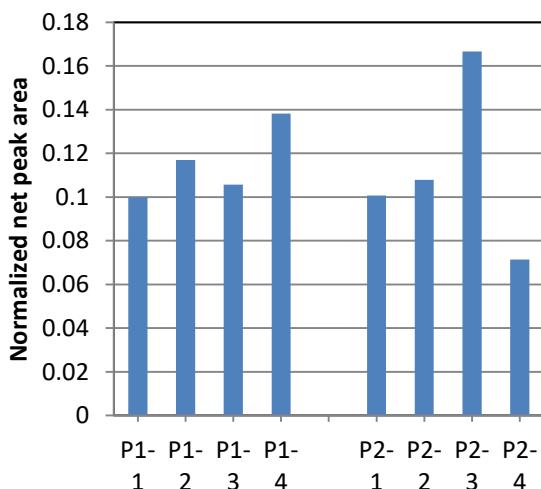
Al K12



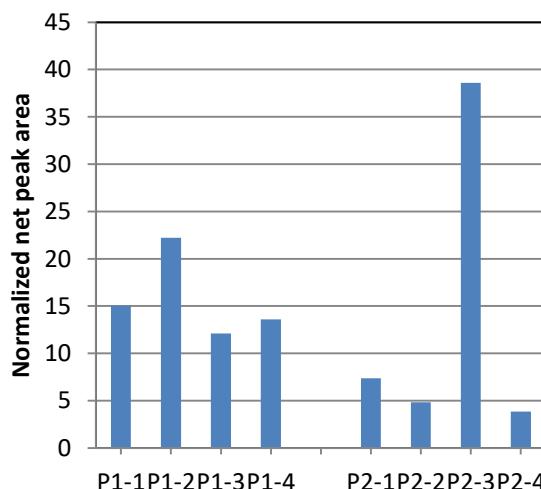
Ca K12



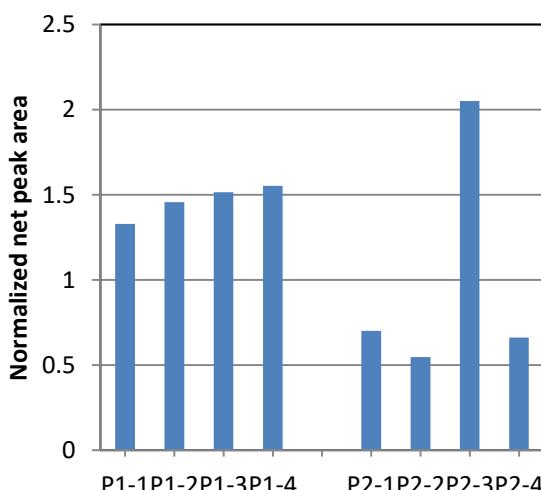
Cu K12



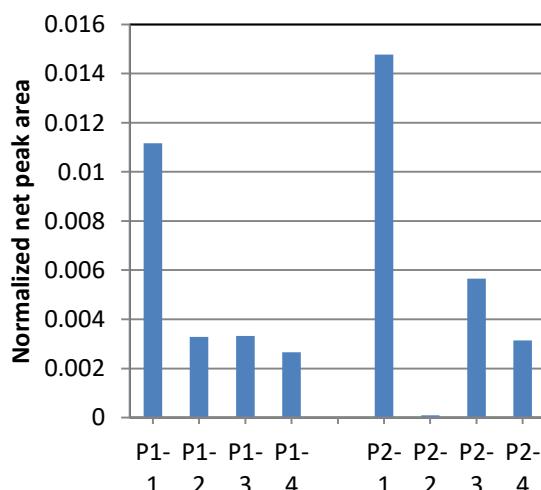
Fe K12

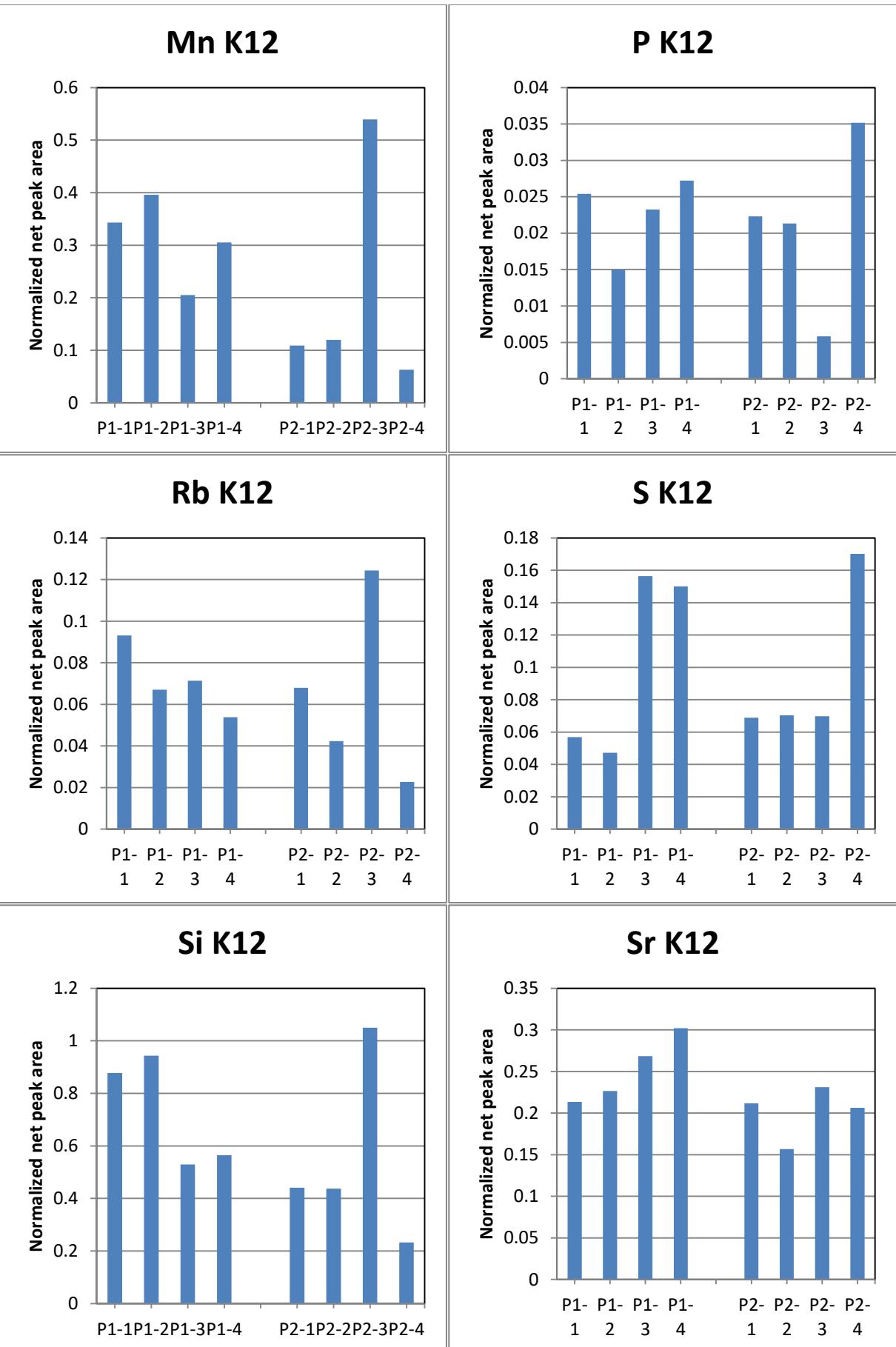


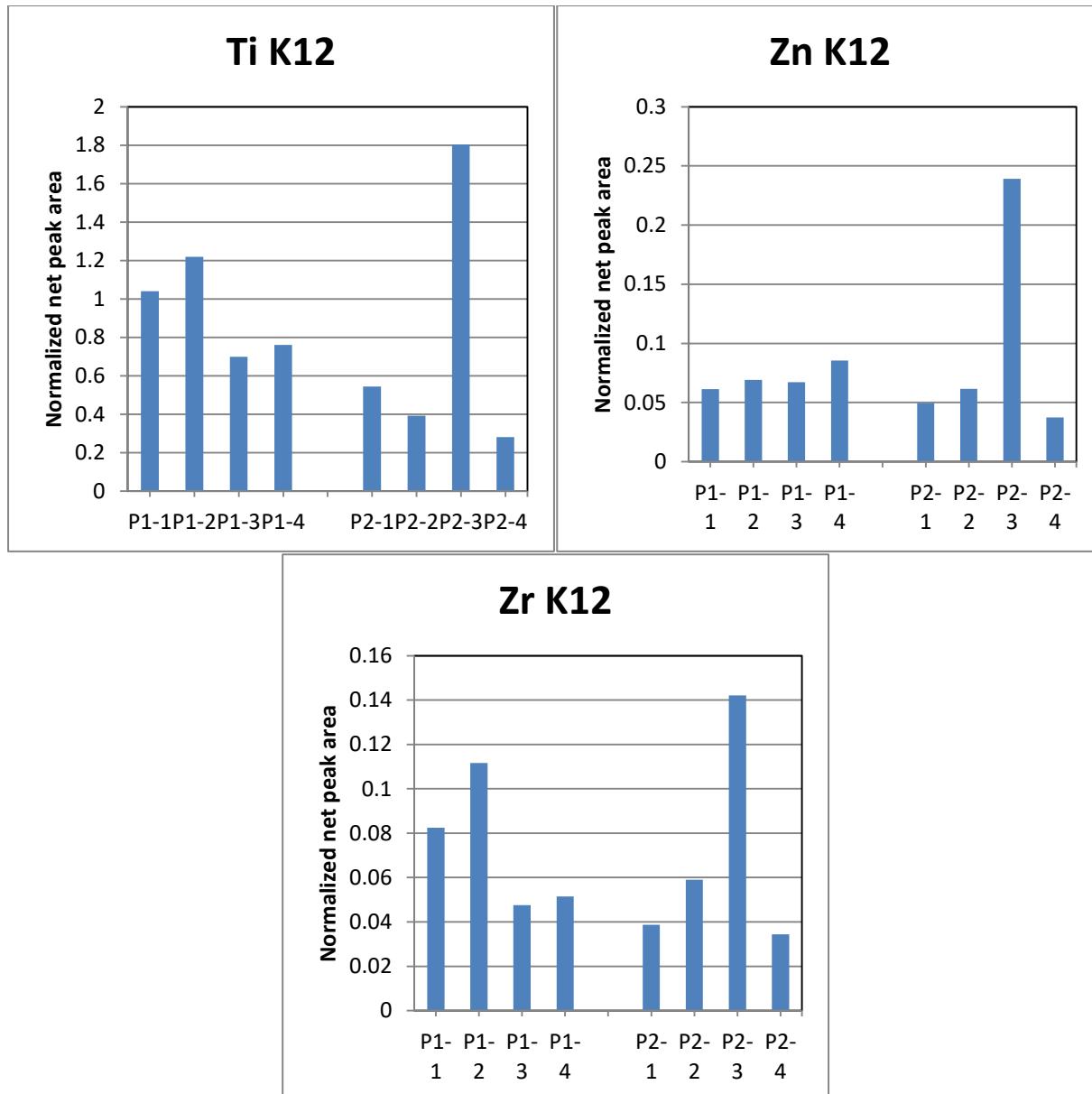
K K12



Mg K12

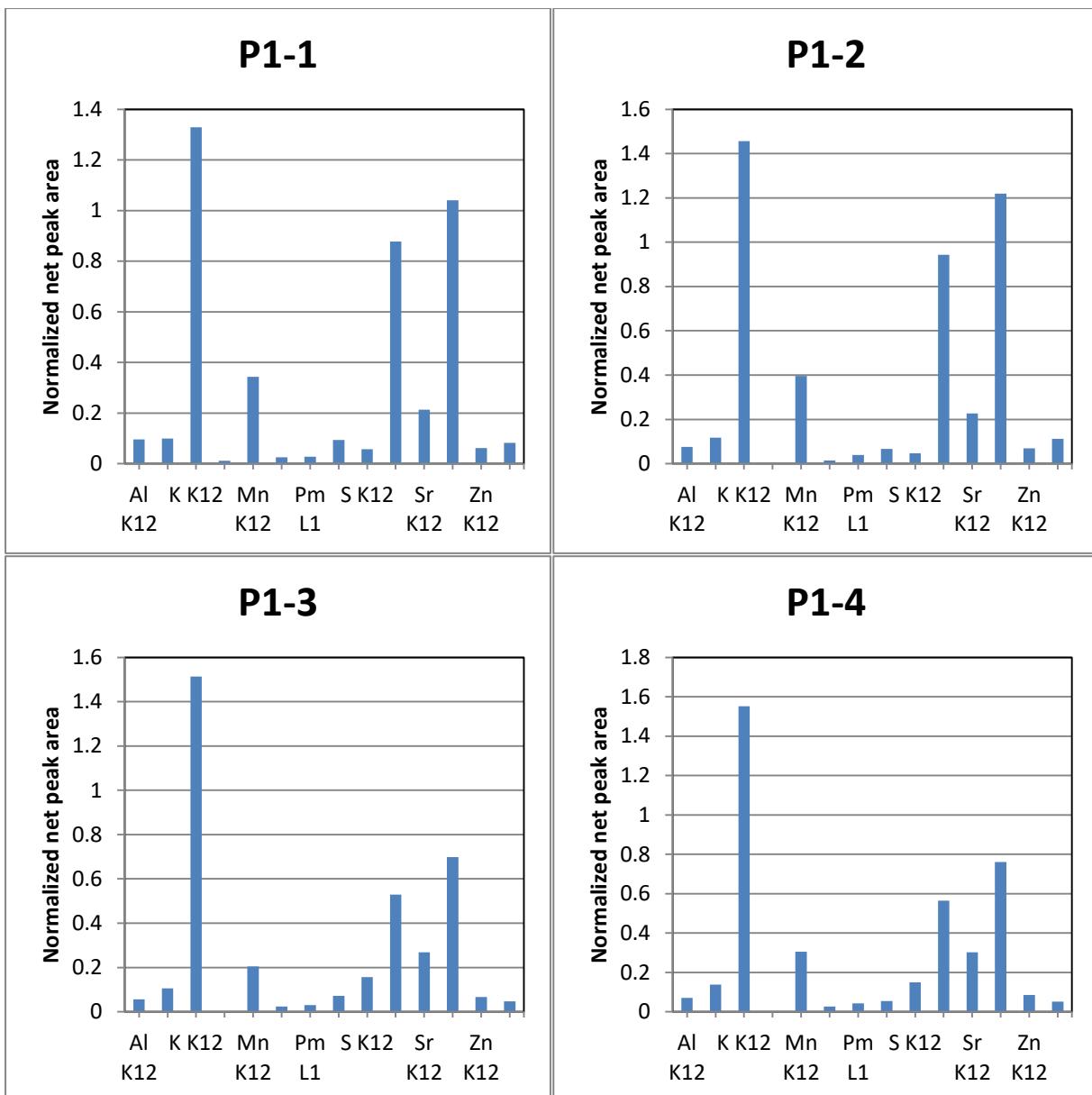


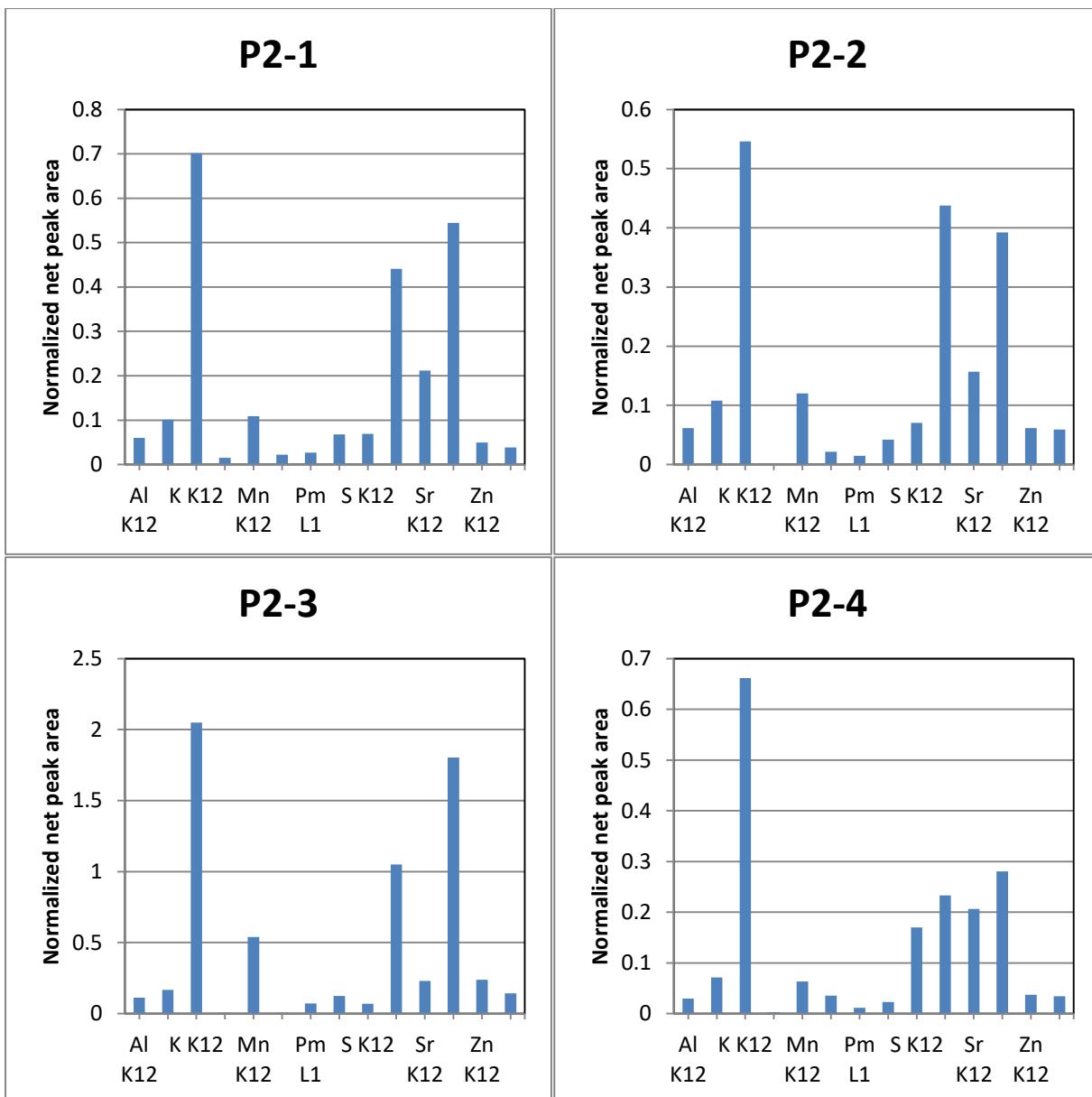




Grafice pentru fiecare punct de masurare*

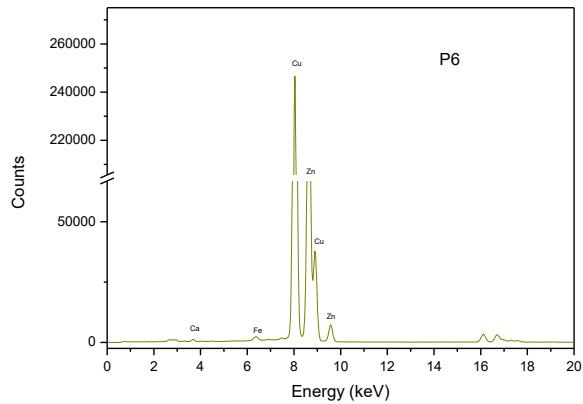
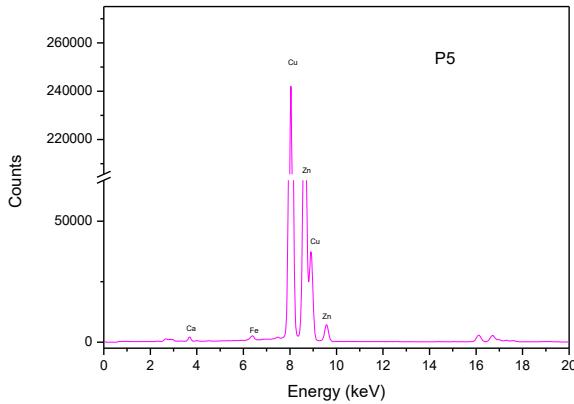
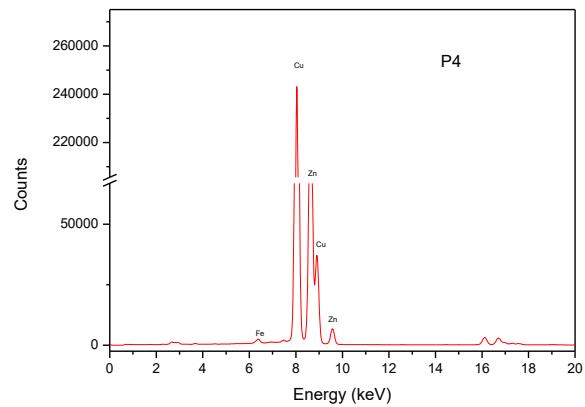
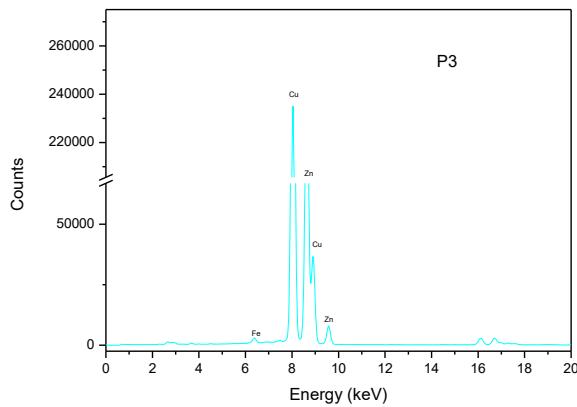
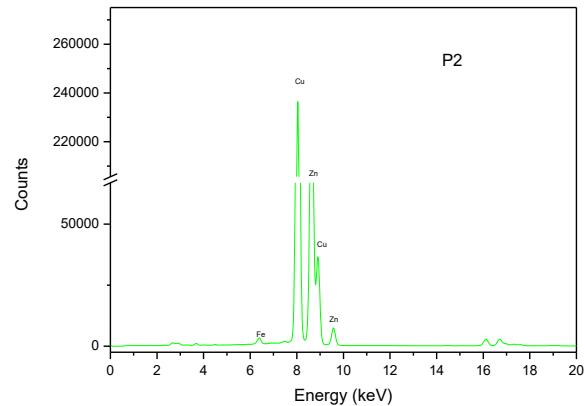
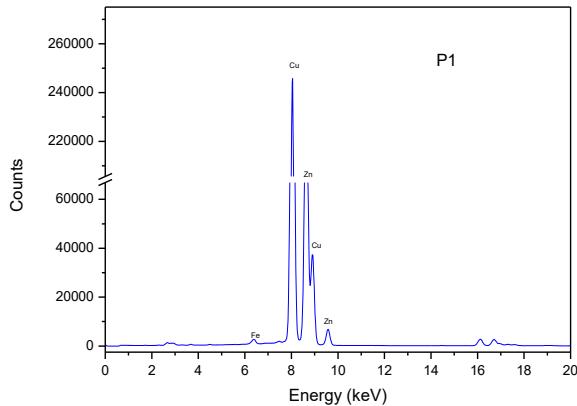
*au fost omise liniile de Ca si Fe, pentru a se putea evidenția contribuția elementelor în urme

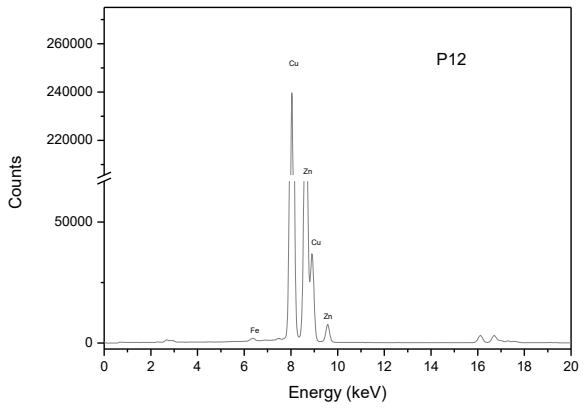
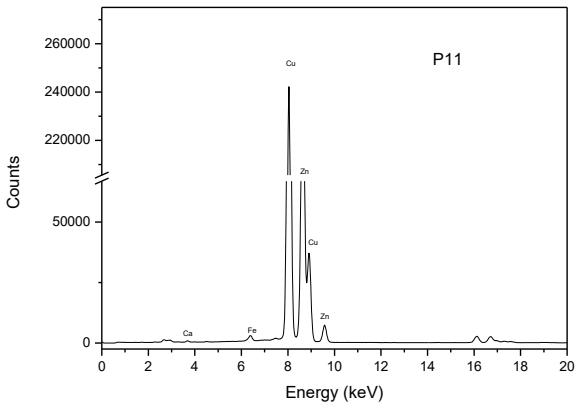
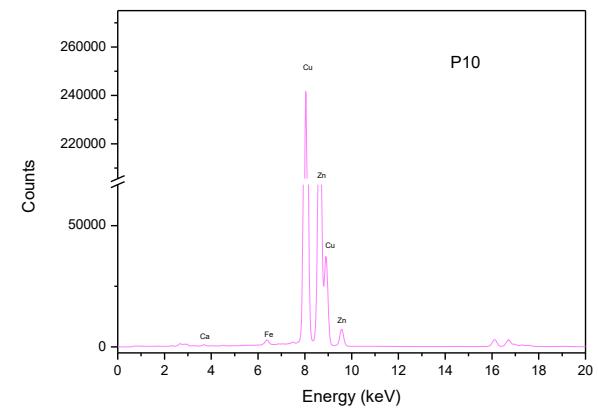
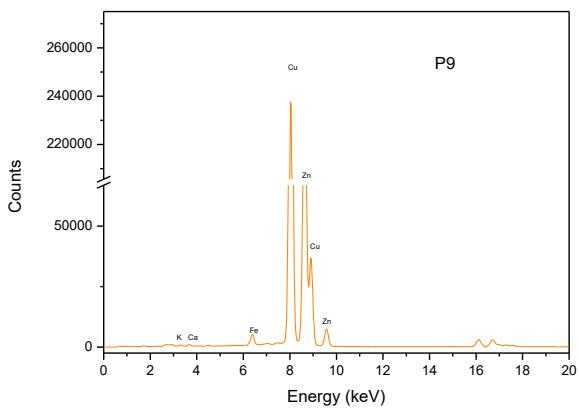
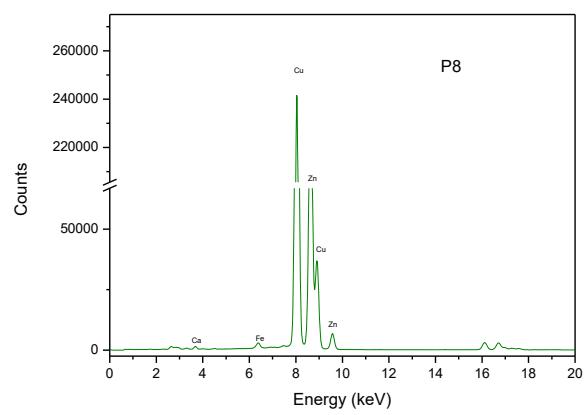
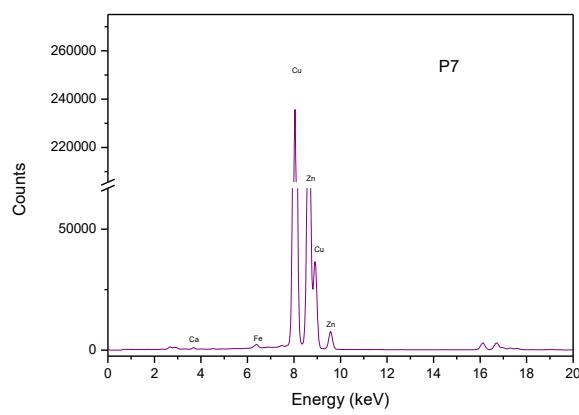




Coloana Infinitului

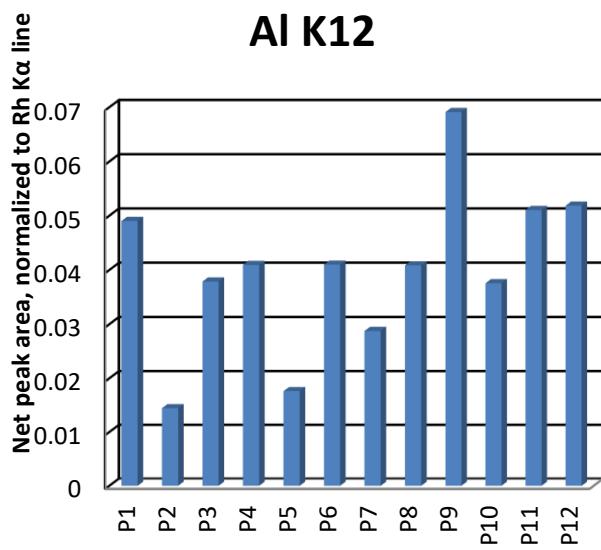
- Elemente comune: Cu, Zn (*ma*), Fe (*mi*), Al, Si, P, S, Cl, Ar, K, Ca, Ti, Cr, Mn, Ni, Rh, Pd, Pb, Bi, Nd (?), Sm (?) (*u*)
- Spectre similare, in principal aliaj de Cu, Zn, Fe, cu variatiuni de intensitate.
- Cumva in P9 e o zona cu mai multa rugina?
- Se evidențiază prezenta Cl



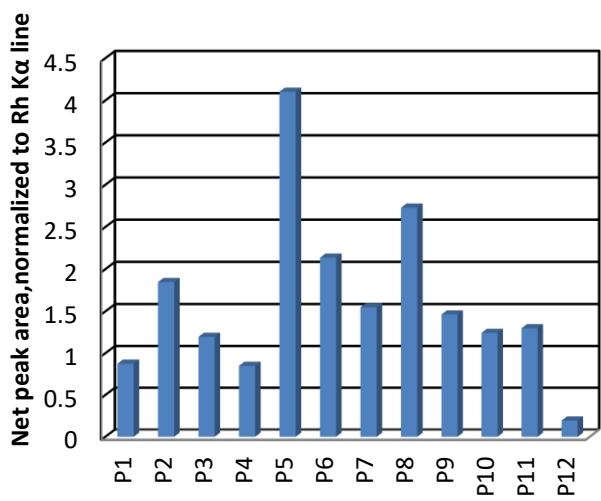


Grafice pe elemente

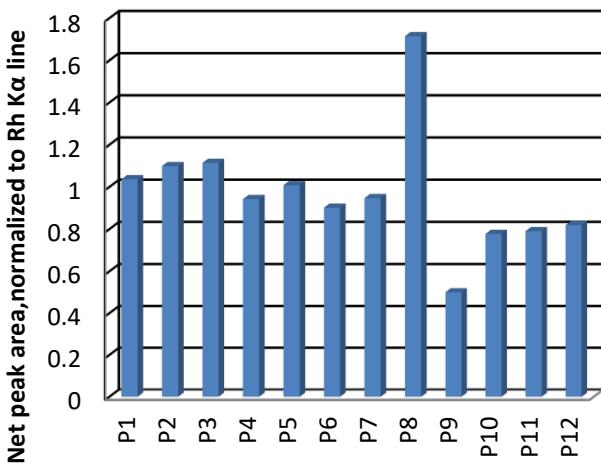
Al K12



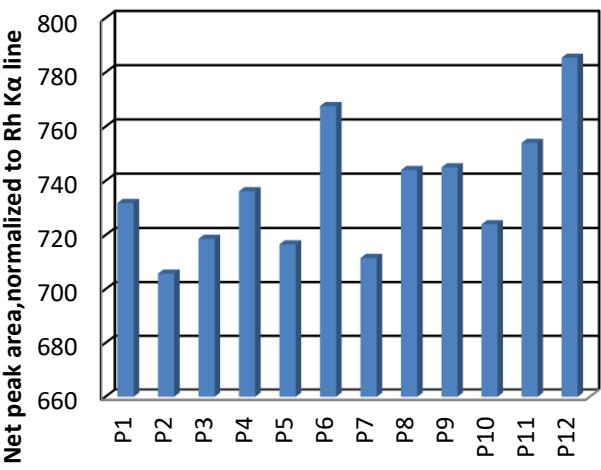
Ca K12



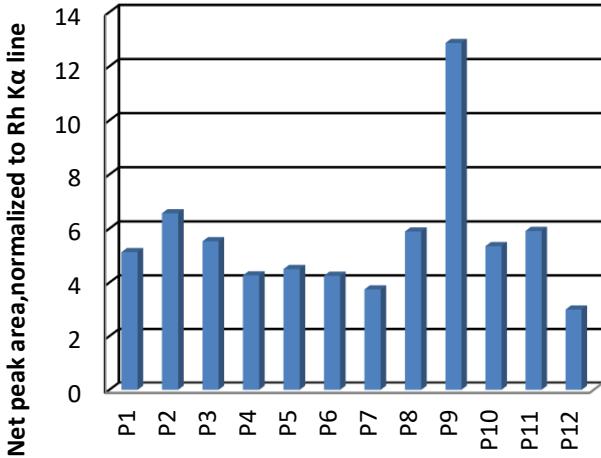
Cl K12



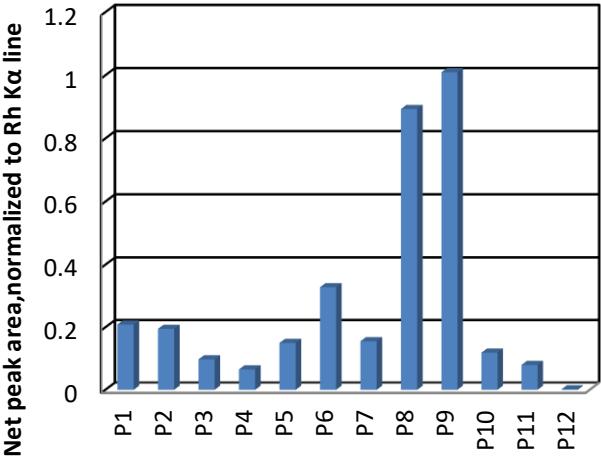
Cu K12

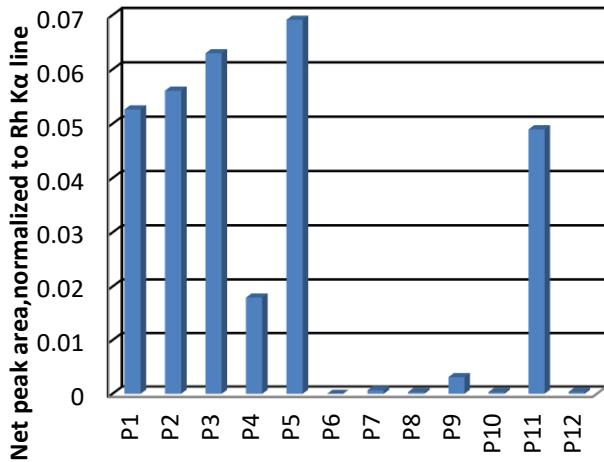
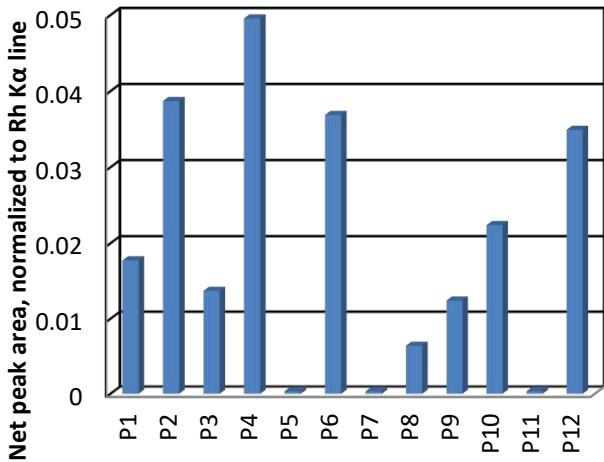
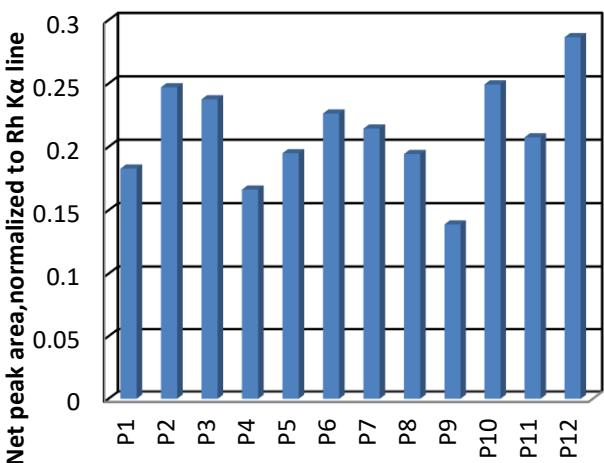
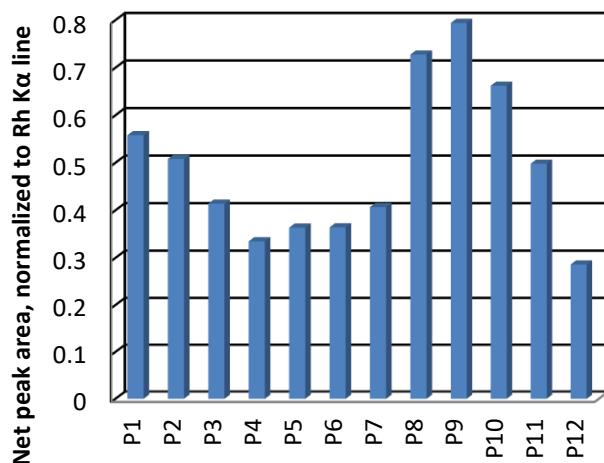
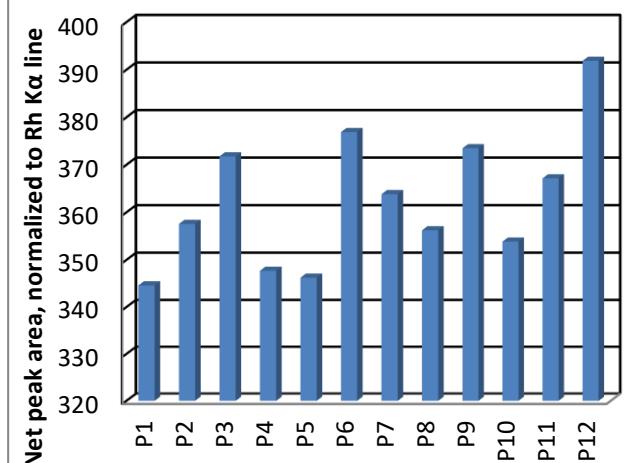


Fe K12

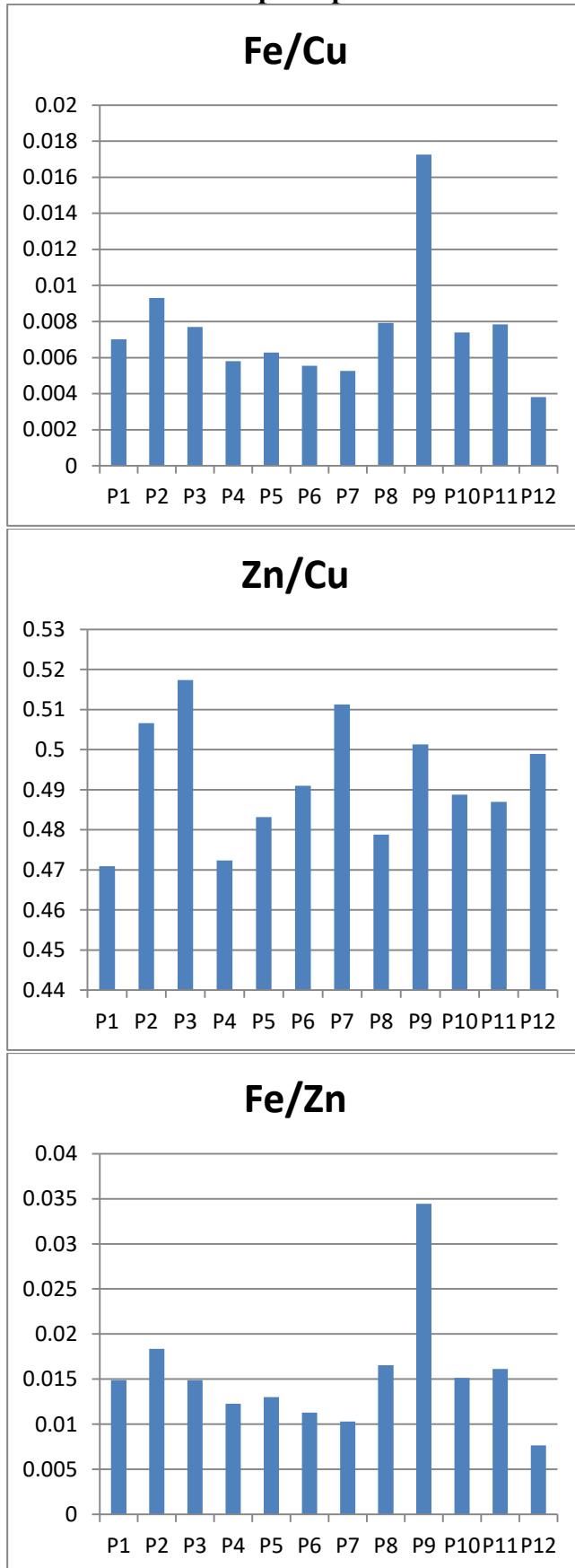


K K12



Mn K12**P K12****S K12****Ti K12****Zn K12**

Grafice ale rapoartelor arilor nete ale principalelor elemente determinate in spectre



Scanarea 3D a Portii Sarutului

Au fost efectuate :

- 17 inregistrari de la sol;
- 2 inregistrari pe monument;
- 4 inregistrari de la inaltime medie.

Au fost generate peste 40 GB de date brute.

Rezolutia unghiulara de scanare a fost cuprinsa intre 150-170 linii pe grad (pentru inregistrarile de la sol respectiv de la inaltime medie), respectiv 60 linii pe grad (pentru inregistrarile efectuate pe monument), rezultand un model unificat ce contine 3.097.828 vertecsi, 18.586.665 margini (edges) si 6.195.555 fete. O fata este alcatauita prin unirea a trei vertecsi legati intre ei de margini (edges). Un vertex reprezinta un punct special aflat la intersectia unor margini (edges). Modelul inregistrat are cotele: lungime 6699.303 mm, inaltime 5448.5371 mm si o latime de 2116.23 mm.



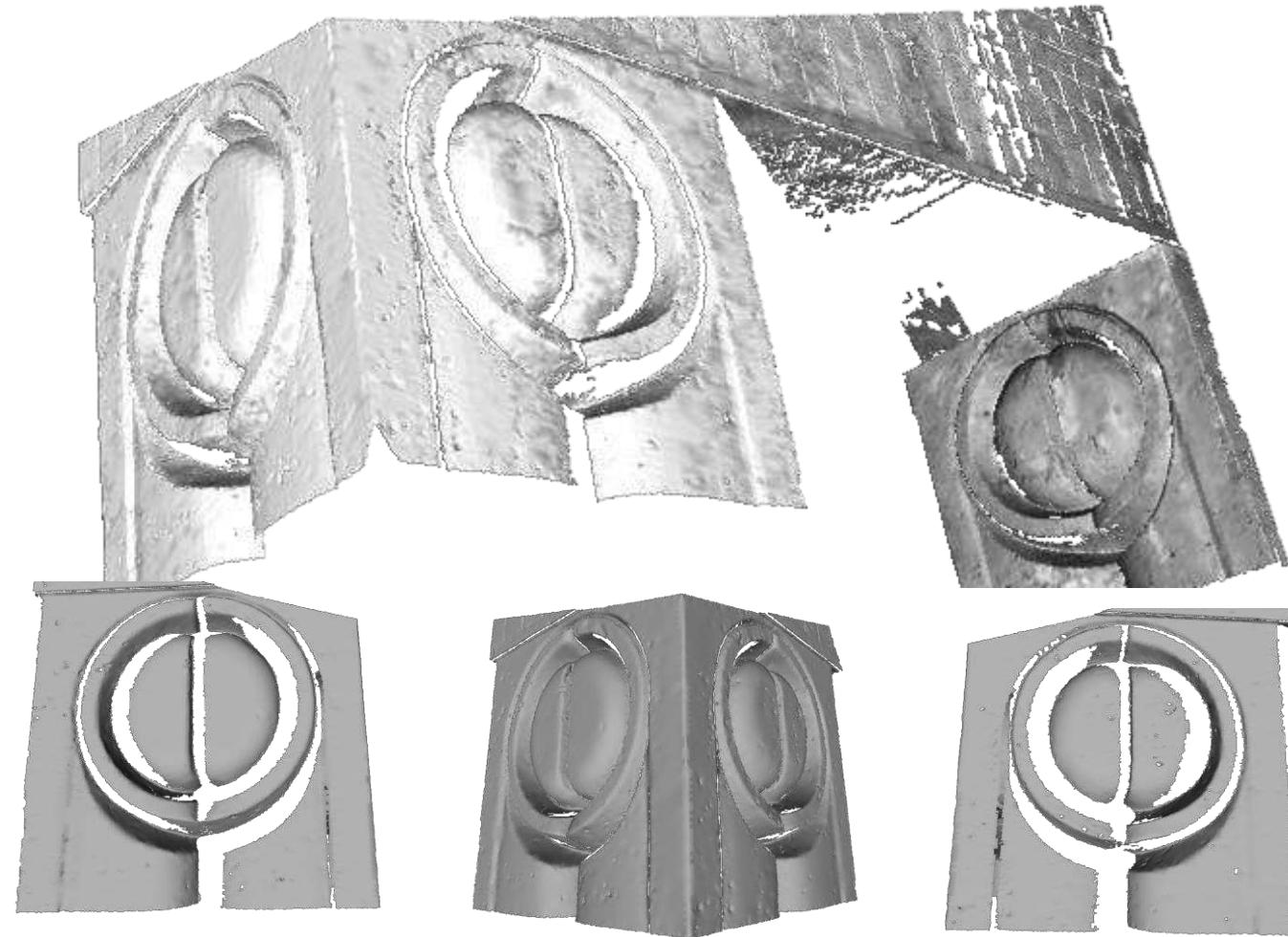
Parametrii pentru fotogrammetrie vor fi raportati la optimizarea modelului cu imagini inlocuite pentru detaliile cu erori. Subliniem ca acest produs nu a fost cuprins in planul

initial de masuratori si investigatii, dar este binevenit si foarte util.

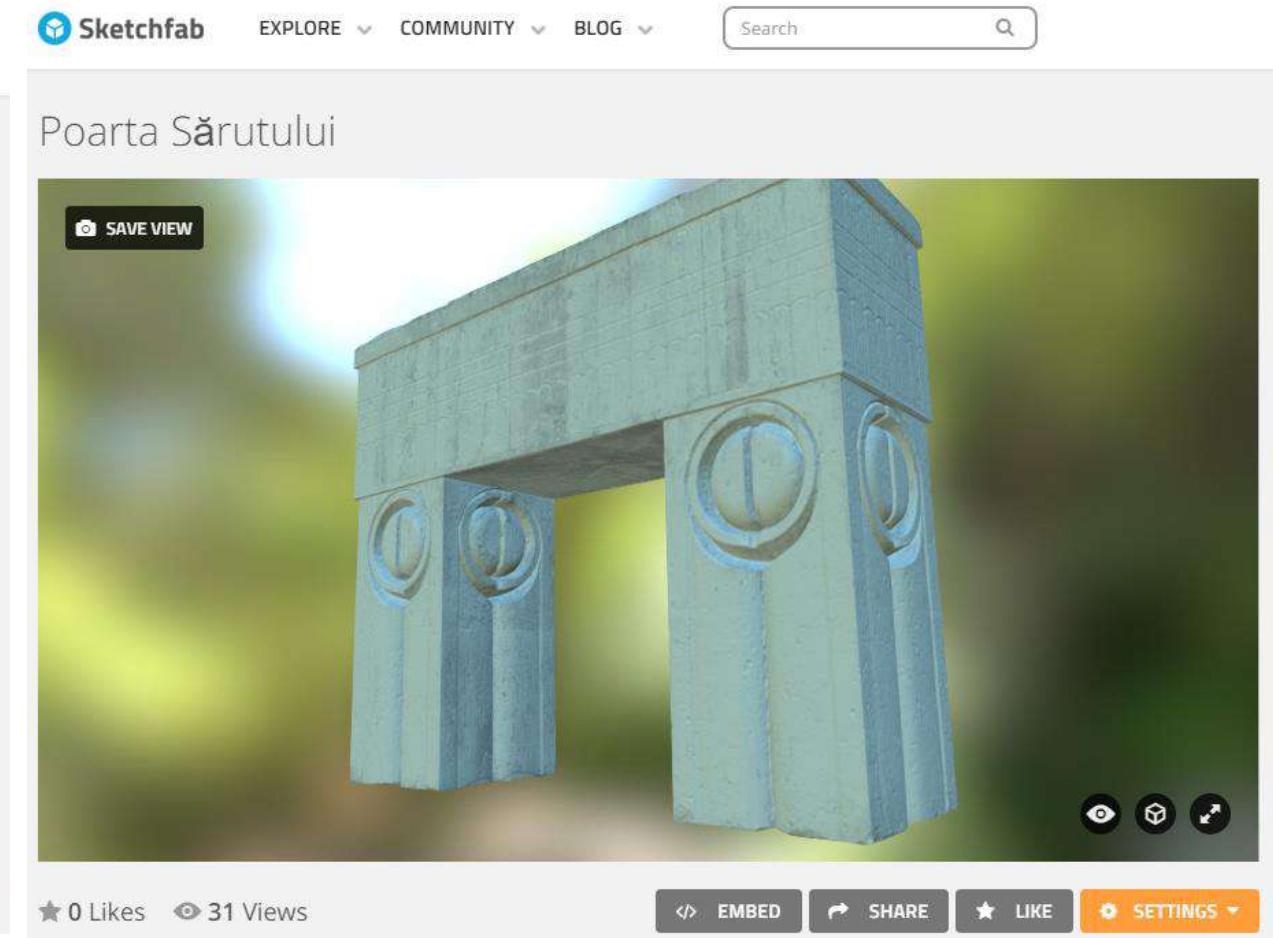
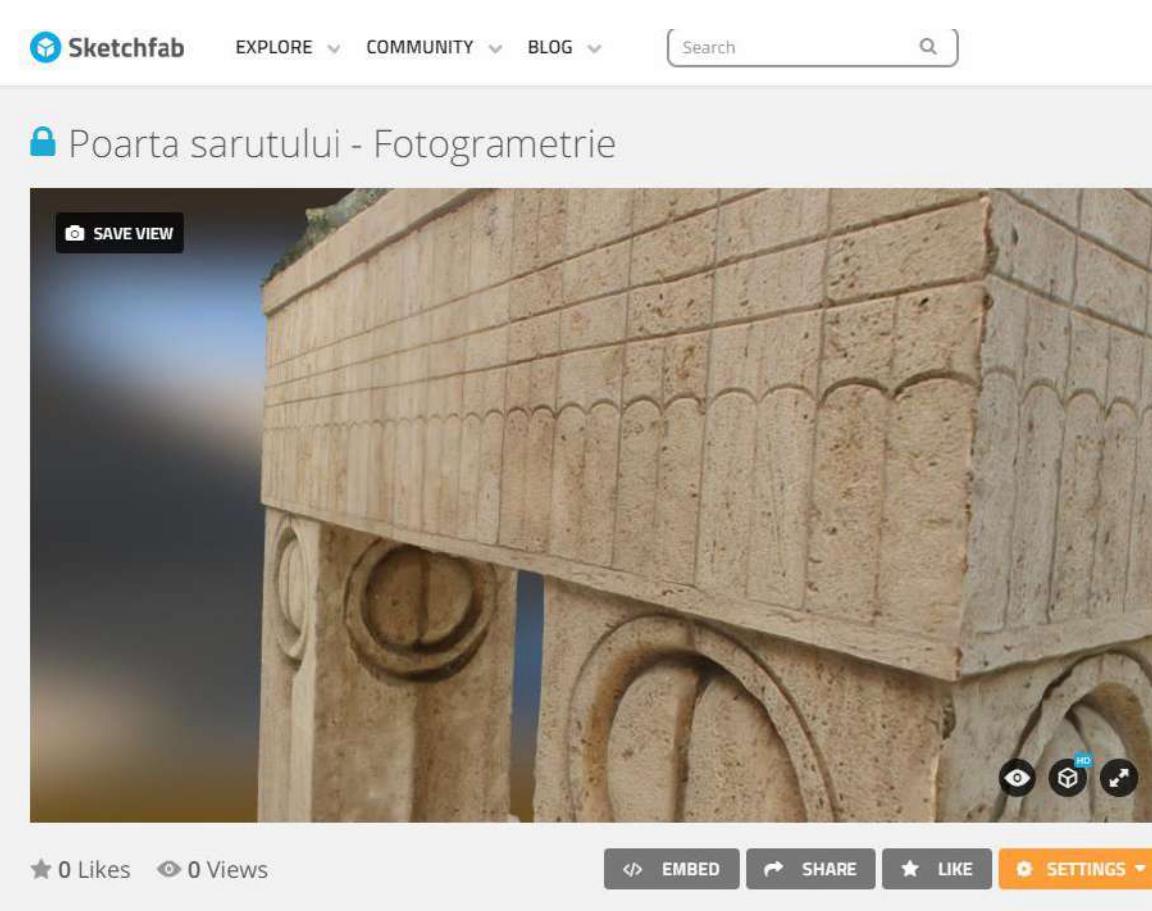
Scanarea 3D a Portii Sarutului

Captura modelului 3D a coltului sud-est a Portii Sarutului. Pentru acest detaliu sunt

- peste 99000 vertecsi
- peste 176800 fatete
- rezolutie < 2mm @30% esantionare



Adrese pentru vizualizarea on-line a modelelor:



- <https://sketchfab.com/models/6c090b2b7b27415ba0f17d5eb5bdac77>
- <https://sketchfab.com/models/2e41f8fa2397456f9554a56150c78c02>

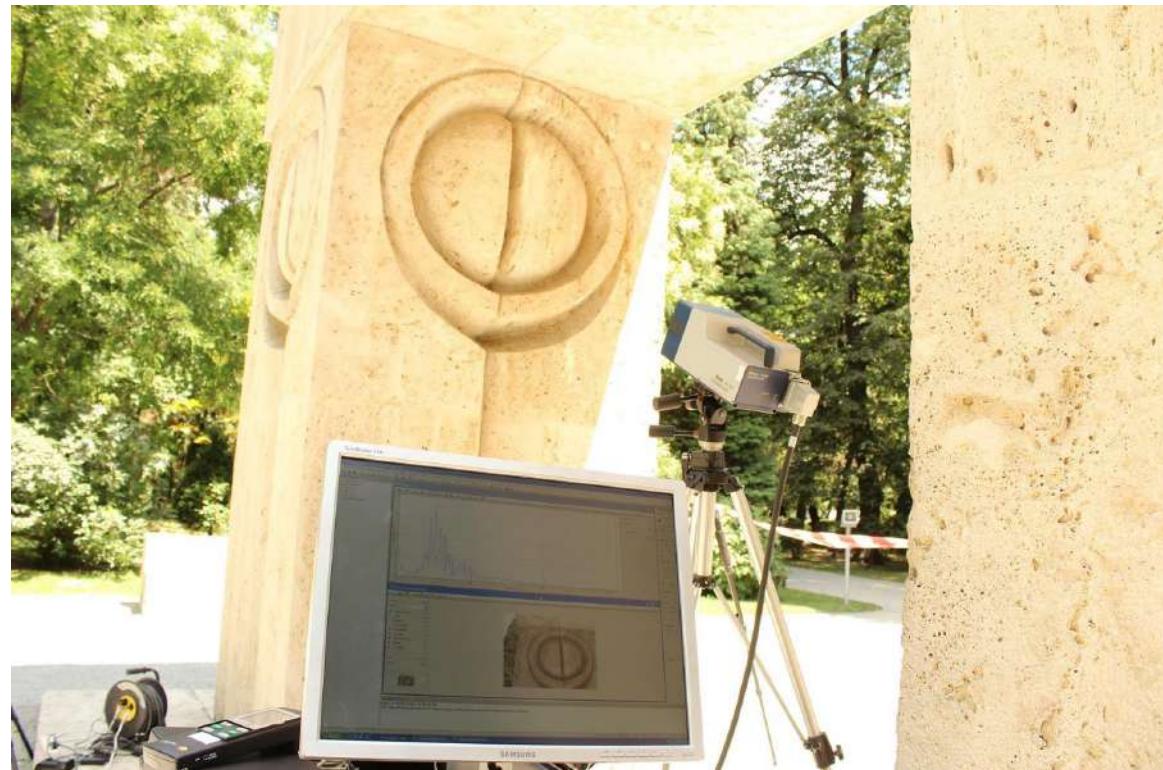
Vibrometrie Doppler cu Laser (LDV)

Ca sursa excitatoare a fost folosita o boxa, cu un semnal de tip *ciripit de zgomot alb* @ 100 dB.

Banda de excitare a fost intre 0.01-1500 kHz, cu un filtru trece sus @ 100 Hz si o fereastra de detectie de tip rectangulara.

Scanarea a respectat un grid cu rezolutia spatiala ~ cm.

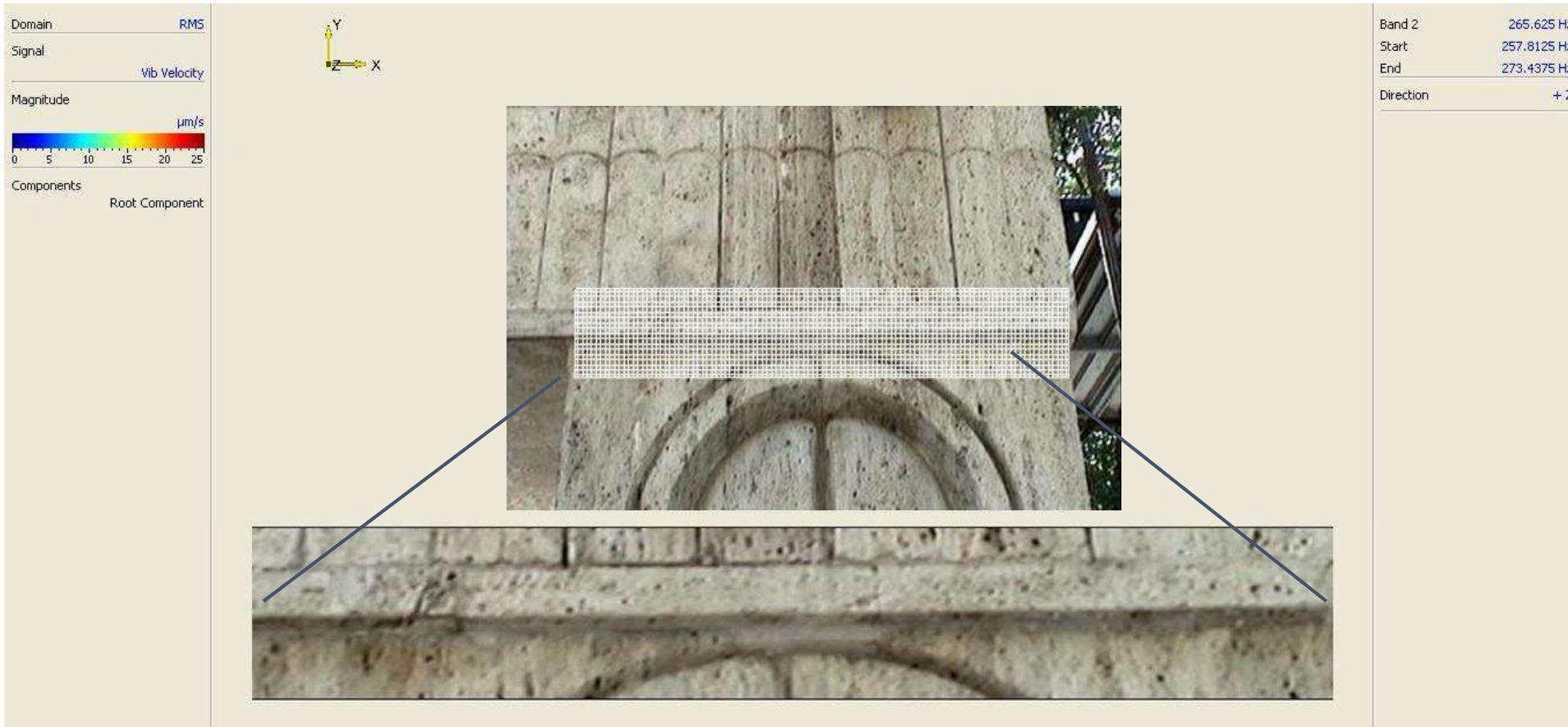
Au fost efectuate 6 inregistrari, fiecare constand in minim 2k puncte.



Vibrometrie Doppler - parametrii folositi

Name:	D:\poarta sarutului\ziua2\picior1-imbinare-scan1.svd	Channels Count:	4	Calibration factor:	1 (m/s)/V
Created:	Date: 7/17/2015 Time: 9:43:05 AM	Acquisition Mode:	FFT	Filter Type:	High Pass
File version:	9.00	Averaging:	Complex	Quality:	Middle
Application version:	9.0.0.0	Averaging count:	3	Int/Diff Quantity:	Velocity
Scan Points		Remeasure Automatically:	Active	Window:	Rectangle
Total:	2071	AutoRange:	Not active	Signal Enhancement:	Active
Not Measured:	0 0.0 %	PCA (MIMO):	Not active	Reference:	Active
Valid:	0 0.0 %	Cosine correction X:	Active	Reference point index:	0
Optimal:	2071 100.0 %	Cosine correction Y:	Active	Direction:	+Z Range:
Overrange:	0 0.0 %	Bandwidth:	1.5625 kHz	10 V Coupling:	DC
Invalidated:	0 0.0 %	Bandwidth from:	7.8125 Hz	Impedance:	1 MOhm
Disabled:	0 0.0 %	Bandwidth to:	1.5625 kHz	Quantity:	Voltage
Not Reachable:	0 0.0 %	FFT Lines:	200	Calibration factor:	1
Hidden:	0 0.0 %	Sample frequency:	4 kHz	Signal Delay:	0 s Filter
VT Failed:	0 0.0 %	Sample time:	128 ms	Type:	No Filter
Hardware		Resolution:	7.8125 Hz	Window:	Rectangle
Scanning Head :	PSV-I-400 LR (OFV-505)	Source:	Internal	Speckle Tracking:	Active
Firmware version:	1.20	Edge:	Positive slope	Mode:	Fast
Junction Box:	PSV-E-401-H4	Pretrigger:	90 %	High pass filter:	100 Hz
Firmware Version:	2.0	Phase from reference:	Off	Signal:	Burst Random
Acquisition Board:	National Instruments PCI-4462	Channel Vibrometer (connected to Vibro 1)		Amplitude:	5 V
Channels Count:	4	Direction:	+Z	Offset:	0 V
		Range:	10 V	Burst start:	50 %
		Coupling:	DC	Burst length:	90 %
		Impedance:	1 MOhm		

Vibrometrie Doppler



Vibrometrie Doppler

