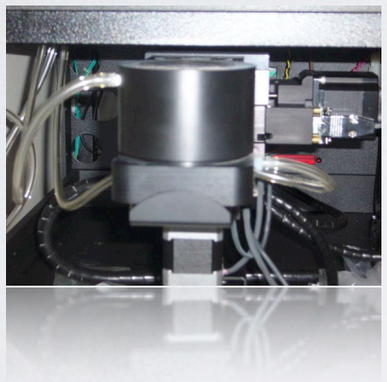
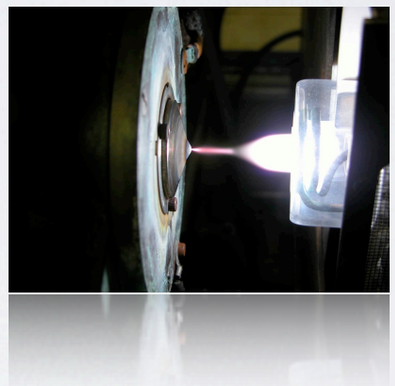
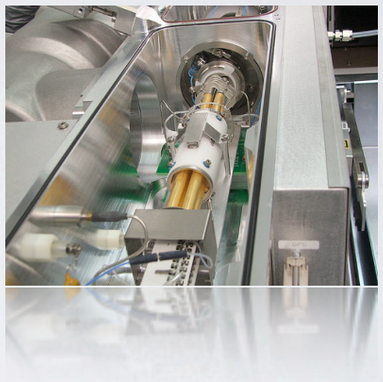
NON-DESTRUCTIVE, QUALITATIVE ANALYSIS OF RARE EARTH ELEMENTS FROM METEORITIC SAMPLES USING A LASER ABLATION SYSTEM COUPLED WITH A PLASMA MASS SPECTROMETER



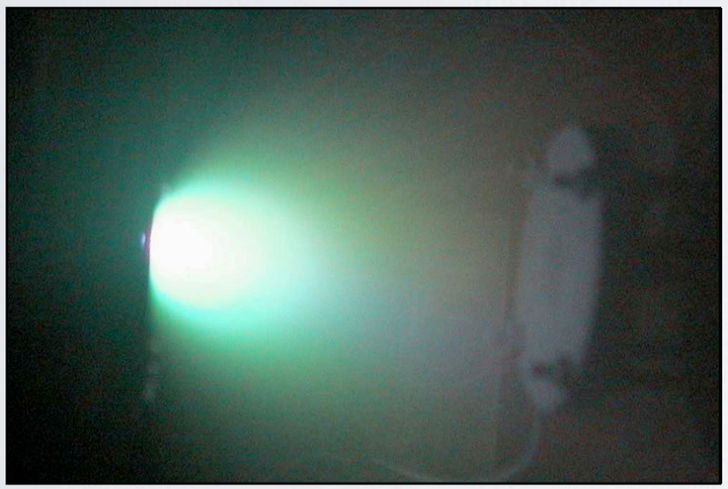




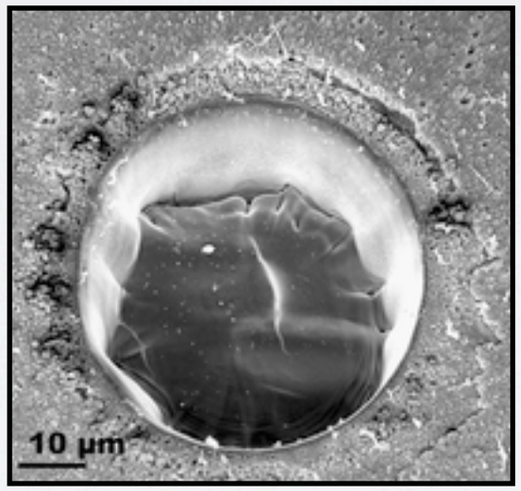
Claudiu Tanaselia[1], Abraham Bela[1], Dana Pop[2], Cecilia Roman[1], Leontin David[3]

(1) INCDO-INOE2000 Research Institute for Analytical Instrumentation (ICIA), Donath 67, 400293 Cluj-Napoca, Romania
(2) Museum of Mineralogy, Babes-Bolyai University, Kogalniceanu 1, 400084 Cluj-Napoca, Romania
(3) Faculty of Physics, Babes-Bolyai University, Kogalniceanu 1, 400084, Cluj-Napoca, Romania

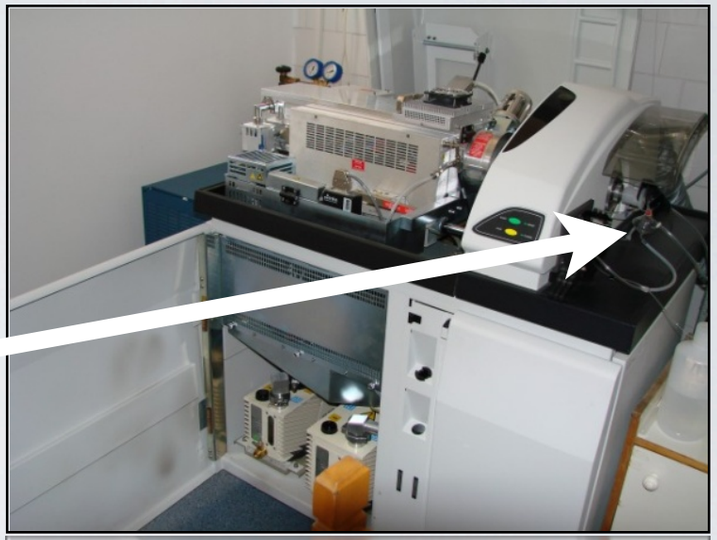
Plescoi meteorite
6.9 kg, chondrite L5-6, 12 June 2008

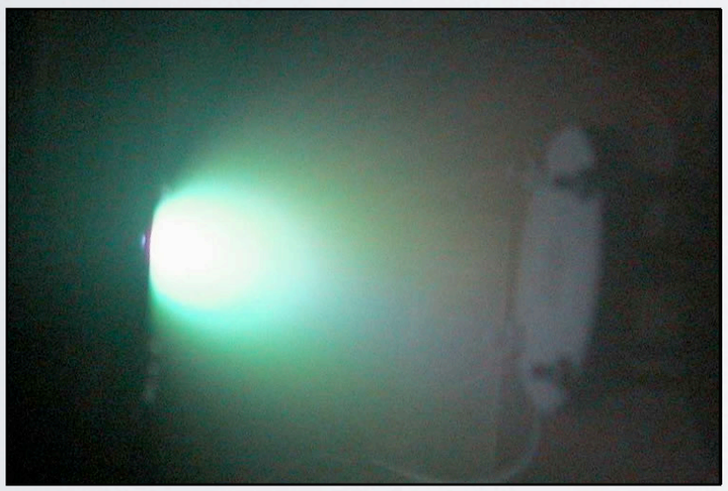
Plescoi meteorite
6.9 kg, chondrite L5-6, 12 June 2008

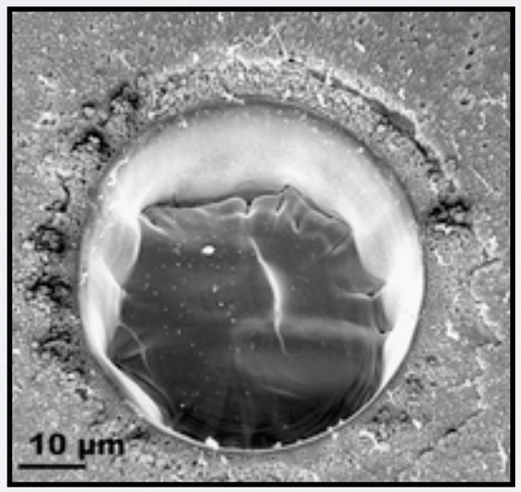




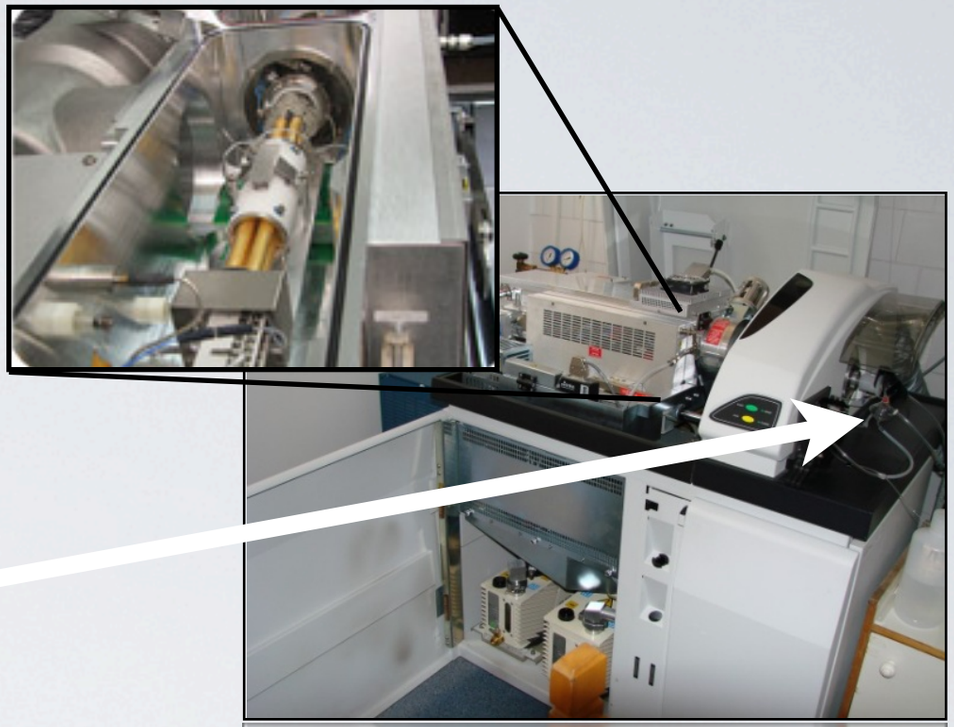
Laser ablation system: non-destructive tehnique

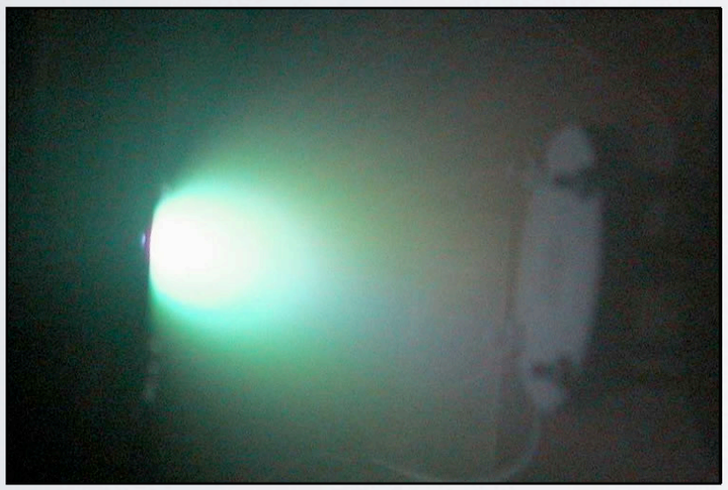


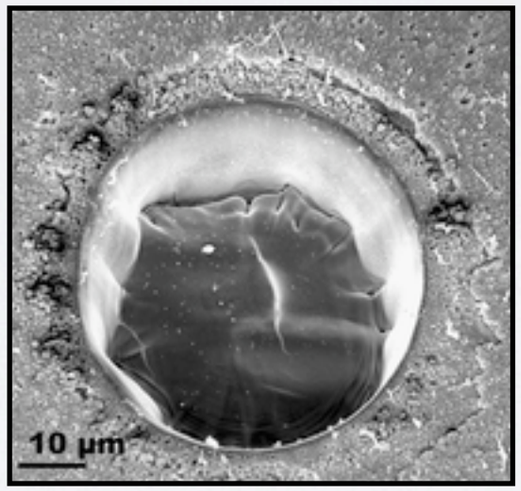




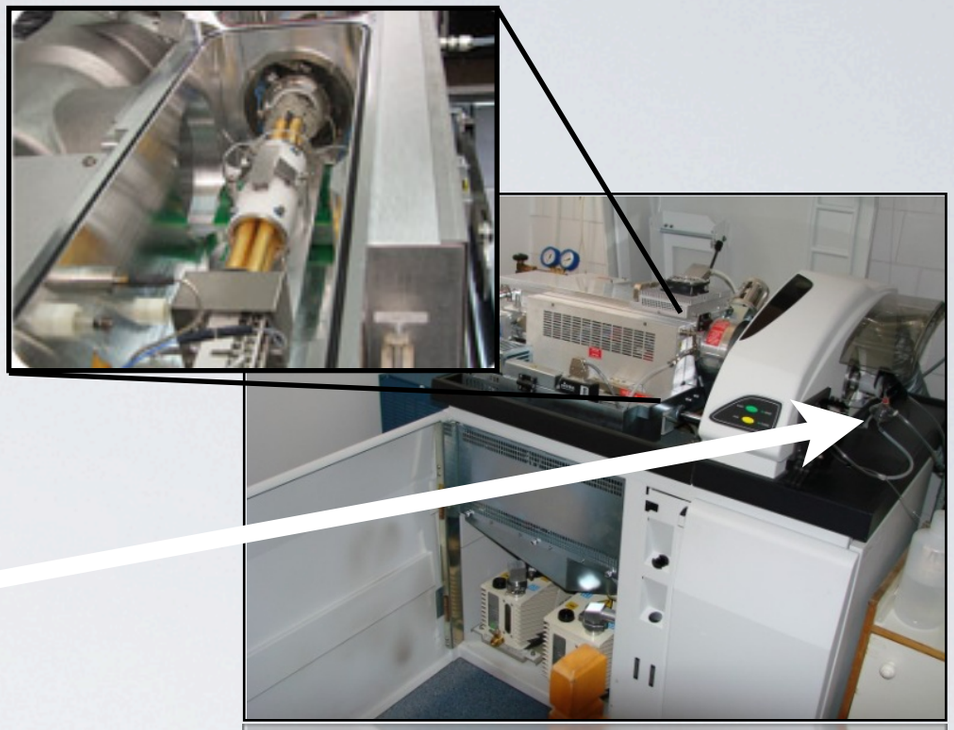
Laser ablation system: non-destructive tehnique





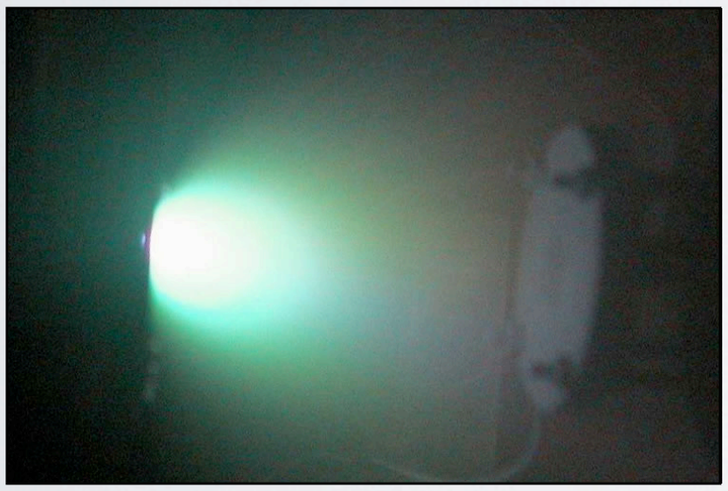


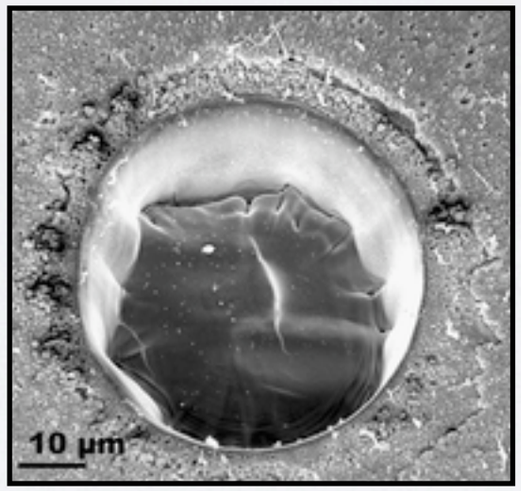
Laser ablation system: non-destructive tehnique



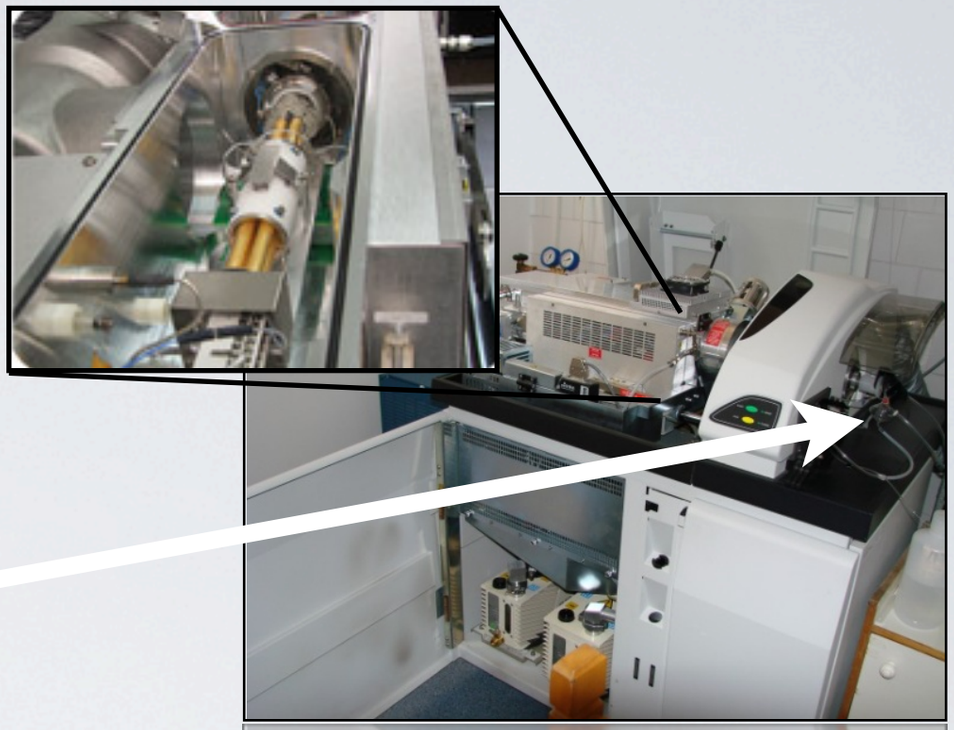
Advantages:

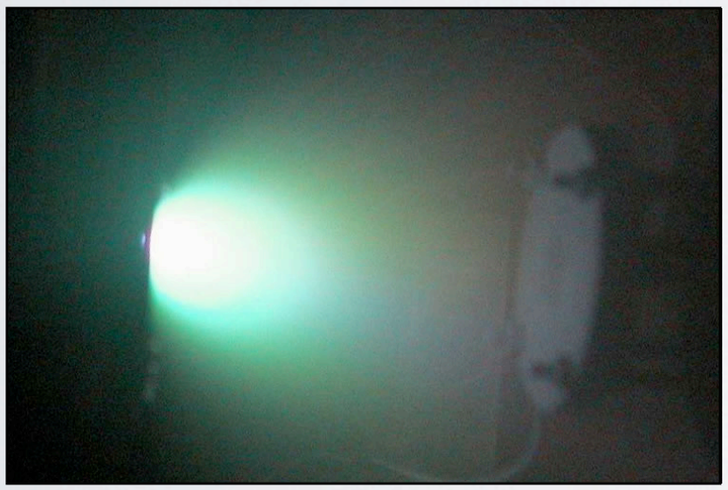
- non-destruvtive method
- solid samples, fast sample preparation
- local information

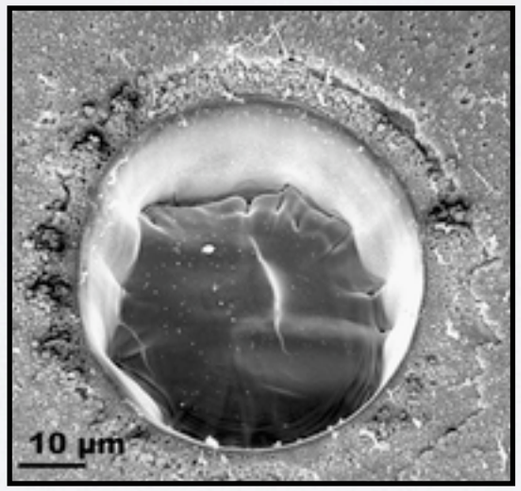




Laser ablation system: non-destructive tehnique







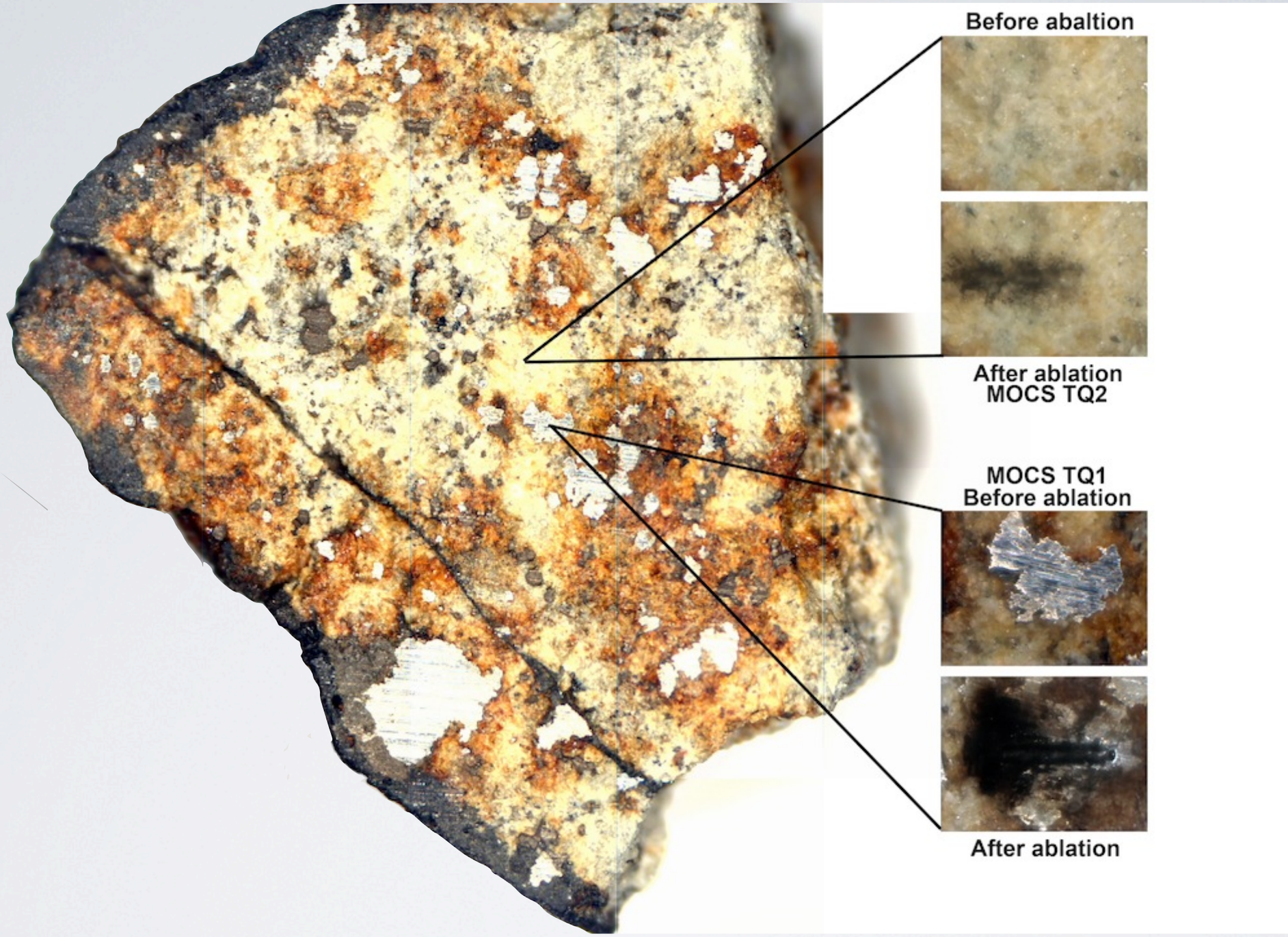
Advantages:

- non-destruvtive method
- solid samples, fast sample preparation
- local information

Disadvantages:

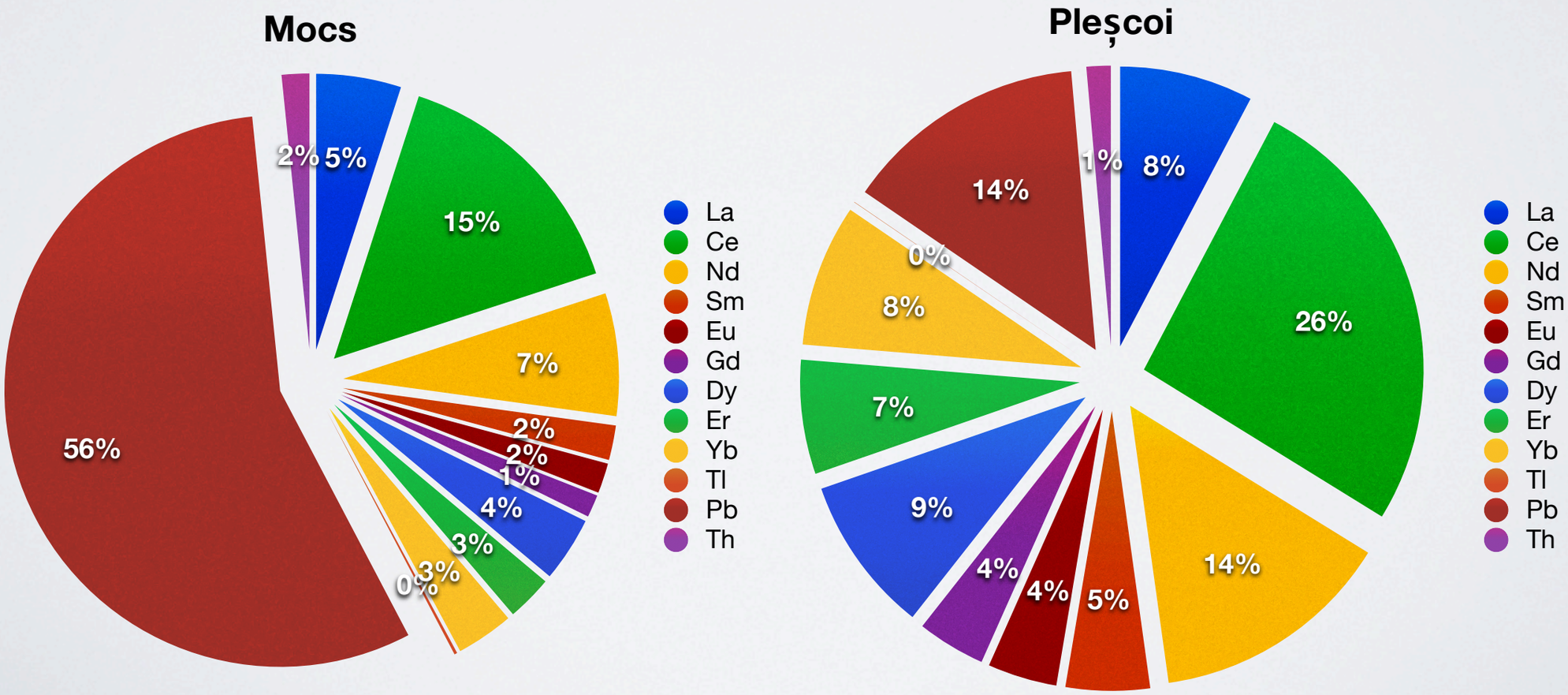
- local information
- signal stability
- lack of certified reference materials

Laser ablation system: non-destructive tehnique



Mocs meteorite
300 kg, chondrite L5-6, 1886

Element	Mocs [%]	Pleşcoi [%]	NIST 610 [%]	Certified Values
La	4.98	7.72	8.12	8.31
Ce	15.01	26.08	8.59	9.01
Nd	7.18	14.00	7.79	8.31
Sm	2.03	4.86	8.53	9.01
Eu	1.76	4.01	8.82	8.31
Gd	1.32	3.95	8.29	9.01
Dy	3.81	9.08	8.40	8.08
Er	2.67	6.60	9.04	9.01
Yb	3.37	8.22	9.46	9.70
Tl	0.17	0.02	3.73	3.61
Pb	56.08	14.06	10.88	8.91
Th	1.62	1.40	8.37	8.73
(Total %)	100.00	100.00	100.00	100.00

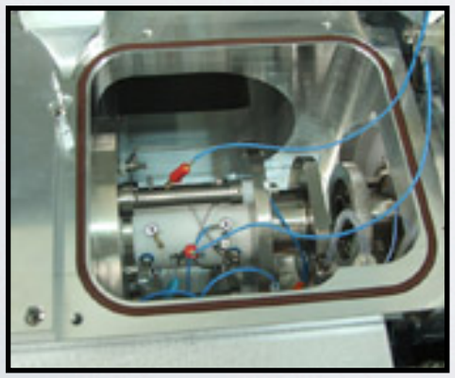


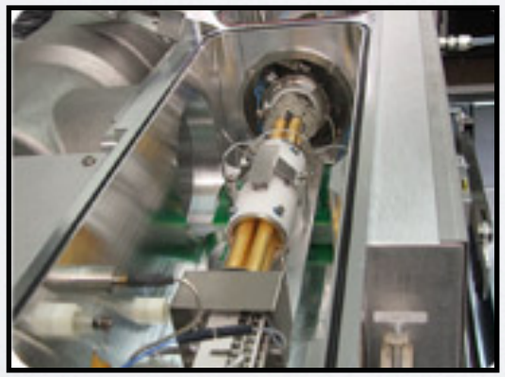
CONCLUSIONS

ICP-MS: ideal for trace elements (incl. RRE)

LA-ICP-MS: ideal for rare, expensive samples

LA-ICP-MS trade-offs





THANK YOU!