Criteria for determining the amount of melting around the ablation craters:

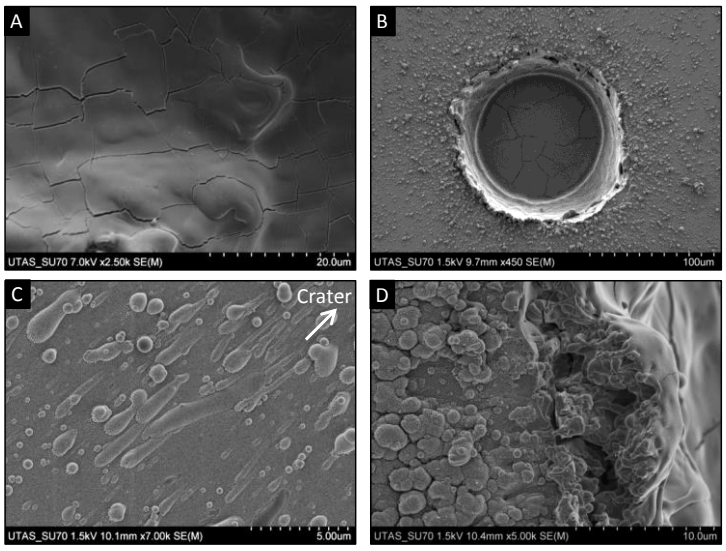
The ablation craters for each mineral were imaged using a FE-SEM. The craters from the UP213 and 193-Ex lasers were ablated with ~100 µm beam size for 300 laser pulses at 4.2 J/cm^2 and 2.7 J/cm^2 respectively. The craters in each mineral were ranked based on the amount of melting using the following criteria: roundness of the crater, slope of the walls, evidence of solidified melt on and around the rim and cooling cracks on the base. For each criteria a value of 0 indicated little or no evidence of melting and a value of 4 indicated high levels of melting, giving a maximum cumulative value of 20.

Amount of Melting 193-Exi:

Mineral	Shape of crater	Slope of crater walls	Melt on base	Melt on rim	Melt ejecta	Total
Pyrite	0	0	0	0	1	1
Sphalerite	0	0	0	1	0	1
Pyrrhotite	0	1	1	2	1	5
Pentlandite	0	2	1	2	1	6
Chalcopyrite	2	1	3	2	2	10
Bornite	1	3	2	3	2	11
Tetrahedrite	3	3	3	3	3	15

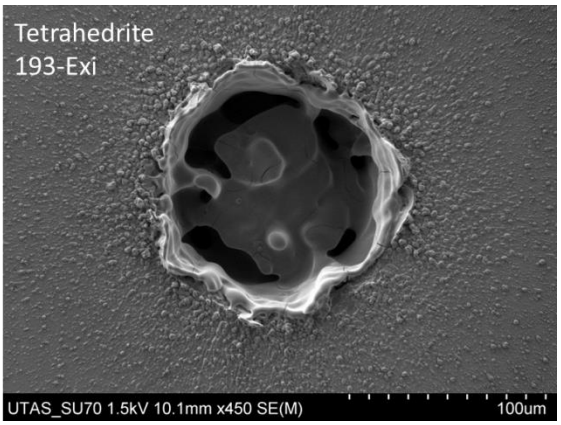
Amount of Melting UP213:

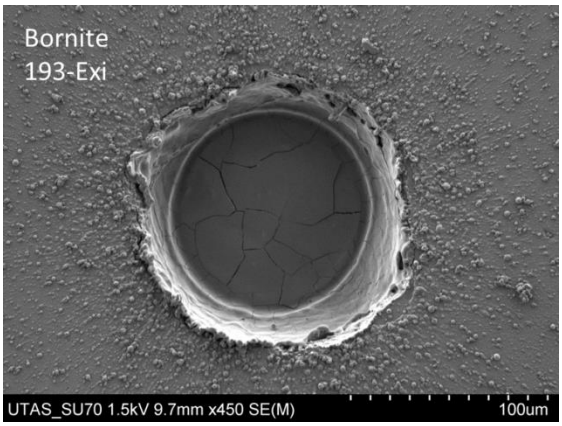
Mineral	Shape of crater	Slope of crater walls	Melt on base	Melt on rim	Melt ejecta	Total
Pyrite	0	0	0	0	1	1
Sphalerite	0	0	1	1	0	2
Pyrrhotite	0	2	2	2	1	7
Pentlandite	1	2	1	2	2	8
Chalcopyrite	2	3	3	2	3	13
Bornite	3	4	4	3	2	16
Tetrahedrite	3	4	4	3	3	17

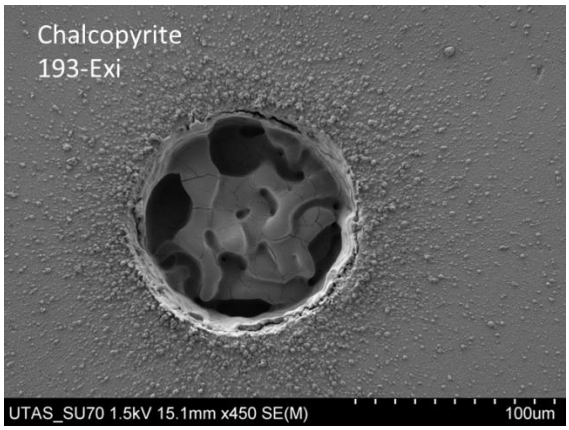


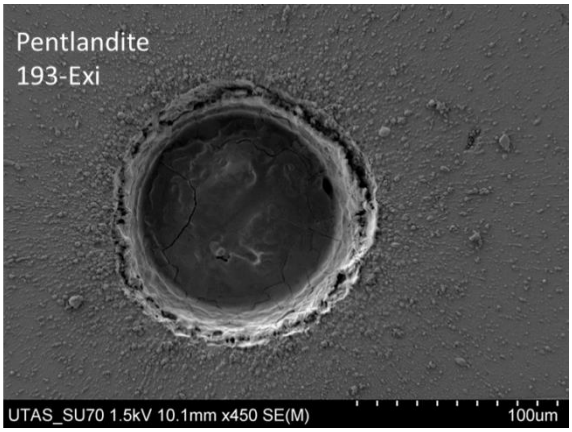
Examples of melting. Secondary electron images of melting in and around the ablation craters. A) cooling crack on the base of crater, pyrrhotite; B) sloping crater walls, bornite; C) spattered melt droplets proximal to the crater, tetrahedrite; D) melting on the crater rim, pentlandite.

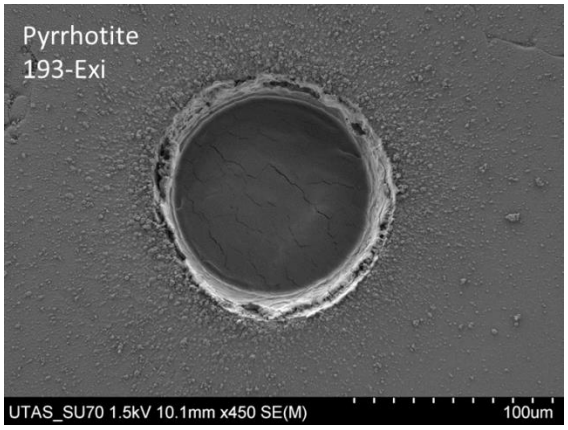
Ablation craters from the 193-Exi laser:

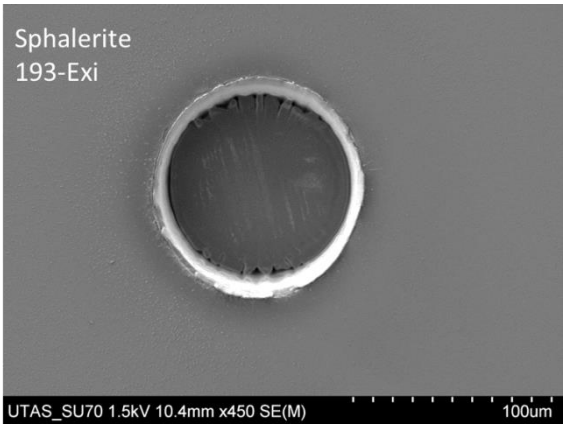


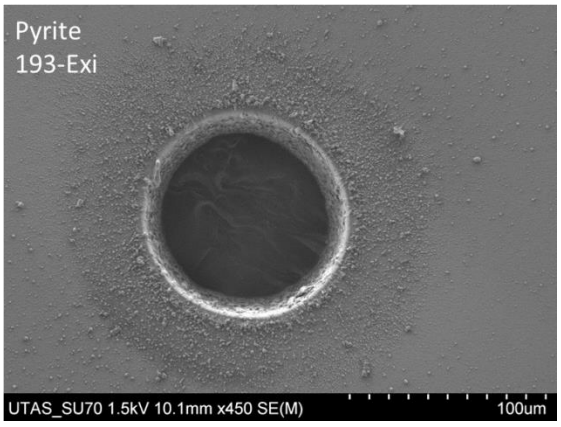












Ablation craters from the UP213 laser: