

Supporting Information

Oxygen Isotope Composition of Trinitite Post-Detonation Materials

Elizabeth C. Koeman^{}, Antonio Simonetti, Wei Chen, and Peter C. Burns*

Department of Civil Engineering and Environment Engineering and Earth Sciences, University
of Notre Dame, Notre Dame, IN 46556

*Corresponding author: ekoeman@nd.edu, 574-631-5380

Abstract

This Supporting Information section includes a description of the morphological classification of trinitite samples. Also, Table S-1 lists major element abundances for the trinitite material that was analyzed for $^{18}\text{O}/^{16}\text{O}$ values.

1. Sample Description

Trinitite samples are sorted by their morphological features. Type 1 samples have a glass-like fused top surface while type 4 samples have unusual inclusions. Specifically, type 4A samples have red colored inclusions, 4B - black inclusions, 4C - light colored flow marks, 4D -blue inclusions, 4E - white and 4F - “coke bottle” color inclusions. Samples labeled type 5 also have unusual inclusions as well as forms. In detail, group 5B contain protuberances or casts on the bottom of specimens, 5C have small submetallic inclusions, 5D are categorized by elongated finger-like extrusions and 5E specimens are labeled as “lace-like”. The sample names listed in Table S-1 consist of the group type followed by a number that represents the original weight of the bulk sample (g).

Table S-1. Major element analyses (wt%) for trinitite material investigated here

Sample	SiO ₂	CaO	Al ₂ O ₃	K ₂ O	FeO	Na ₂ O	MgO	Total
1 5.05	77.87	2.97	7.10	7.58	1.13	1.04	0.85	98.53
4A 5.37	68.52	6.39	10.75	5.69	1.96	1.54	1.38	96.22
4B 4.92	82.19	2.04	5.86	2.45	1.24	1.42	0.71	95.90
4C 5.33	67.68	10.63	12.06	3.19	2.74	1.79	0.55	98.65
4C 6.75-1	70.25	6.38	12.04	3.53	1.67	2.22	1.06	97.16
4C 6.75-2	85.61	1.58	6.24	4.13	0.73	1.02	0.00	99.32
4D 10.44	96.54	0.49	0.00	0.17	0.00	0.00	0.00	97.20
4D 2.45	67.36	5.02	12.41	7.72	2.02	1.69	1.38	97.60
4D 2.45	92.58	0.00	3.70	0.00	0.00	0.00	0.00	96.29
4E 1.04	88.14	1.78	1.42	2.41	1.65	0.00	0.75	96.13
4E 3.18	63.75	0.00	16.95	15.03	0.00	1.02	0.00	96.75
4F 6.30-1	64.20	5.25	16.23	8.13	2.68	2.01	0.48	98.97
4F 6.30-2	75.56	8.12	9.33	3.37	2.66	0.00	0.00	99.04
4F 9.36	69.25	5.89	12.11	3.83	2.83	2.06	0.81	96.78
5B 10.48	68.75	0.62	15.70	10.68	1.22	2.08	0.00	99.05
5C 7.68	66.23	6.27	14.89	3.37	2.70	2.01	1.59	97.06
5D 1.57	68.88	6.16	11.73	4.61	2.42	2.02	1.04	96.86
5D 1.78	68.14	7.04	15.93	2.54	5.08	1.25	0.80	100.8
5D 1.94	63.79	4.07	10.24	3.59	1.54	2.13	0.80	86.16
5E 1.47	67.06	7.78	14.15	3.00	2.19	2.36	0.86	97.40
5E 2.10	68.88	6.16	11.73	4.61	2.42	2.02	1.04	96.87
5E 2.44-1	66.19	2.97	15.68	3.94	2.62	4.72	1.26	97.38
5E 2.44-2	68.01	6.70	9.94	5.10	2.28	2.21	1.59	95.82