

UC Berkeley

Archaeological X-ray Fluorescence Reports

Title

An Energy-Dispersive X-Ray Fluorescence Analysis of Obsidian Artifacts from Tiburón and San Esteban Islands, Gulf Of California, Mexico

Permalink

<https://escholarship.org/uc/item/6dp349jp>

Author

Shackley, M. Steven

Publication Date

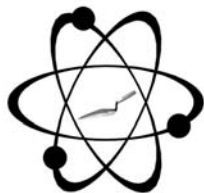
2011-07-01

Supplemental Material

<https://escholarship.org/uc/item/6dp349jp#supplemental>

Copyright Information

This work is made available under the terms of a Creative Commons Attribution-NonCommercial License, available at <https://creativecommons.org/licenses/by-nc/4.0/>



GEOARCHAEOLOGICAL XRF LAB

ARCHAEOLOGICAL XRF LABORATORY
NE

8100-M4-158 WYOMING BLVD

ALBUQUERQUE, NM 87113 USA

LETTER REPORT

AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF OBSIDIAN ARTIFACTS FROM TIBURÓN AND SAN ESTEBAN ISLANDS, GULF OF CALIFORNIA, MEXICO

1 July 2011

Alan Ferg
Arizona State Museum
University of Arizona
Tucson, AZ 85721

Dear Alan,

There are a number of sources present in the assemblage, none of which match any of the known sources in northwest Mexico or the U.S. Southwest, including Baja California, Arizona, or New Mexico (Table 1, Figure 1). The gray-green obsidian given the presence of cores and flakes suggests that it is nearby, or even on the island. Samples 17 and 18 exhibit elemental concentrations similar to Puerto el Parral east of San Felipe, Baja California in the Puertocitos Volcanic Field, but do not fit close enough to posit an assignment, especially given the distance across the gulf. There does appear to be four distinct chemical groups based on Rb, Sr, Zr, but without source standard data it is difficult to refute.

The samples were analyzed with a Thermo Scientific *Quant'X* EDXRF spectrometer in the Archaeological XRF Laboratory, El Cerrito, California. Specific instrumental methods can be found at <http://www.swxrflab.net/anlysis.htm>, and Shackley (2005). Samples assigned to source by comparison to source standards at the lab (Shackley 2005). Analysis of the USGS RGM-1 standard indicates high machine precision for the elements of interest (Table 1).

Sincerely,

M. Steven Shackley, Ph.D.
Director

VOICE: 505-856-4083
INTERNET: shackley@berkeley.edu
<http://www.swxrflab.net/>

REFERENCES CITED

Shackley, M.S.

2005 *Obsidian: Geology and Archaeology in the North American Southwest*. University of Arizona Press, Tucson.

Table 1. Elemental concentrations for the archaeological samples. All measurements in parts per million (ppm).

Sample	Ti	Mn	Fe	Zn	Rb	Sr	Y	Zr	Nb	Ba	Pb	Th
2011-1	1515	271	1196 4	55	145	143	20	162	9		18	19
2011-2	1542	298	1198 4	64	143	142	23	160	9		20	24
2011-3	1661	374	1420 4	77	148	276	18	153	16		26	24
2011-4	1594	356	1404 4	72	150	270	23	153	13		22	19
2011-5	1521	351	1368 3	57	142	259	23	152	14		21	16
2011-6	1408	342	1295 3	71	137	255	21	144	13		23	13
2011-7	1785	423	1574 2	80	156	288	25	153	12		24	20
2011-8	1459	343	1287 4	64	135	254	23	143	11		22	11
2011-9	1464	351	1390 8	69	139	267	21	149	9		24	14
2011-10	1458	363	1324 3	62	142	259	24	144	12		21	14
2011-11	1643	382	1449 0	72	145	266	21	149	10		31	20
2011-12	853	261	1039 4	95	201	17	52	108	25		19	17
2011-13	1729	390	1537 6	69	141	283	26	150	11		23	17
2011-14	1605	360	1403 7	73	147	268	24	150	10		31	10
2011-15	1697	417	1280 0	75	258	165	22	182	13		39	45
2011-16	1447	345	1348 6	68	141	265	22	148	11		24	17
2011-17	1402	345	1400 3	71	123	49	39	223	10	1275	17	12
2011-18	1095	283	1134 6	52	107	44	43	211	13	1293	10	11
2011-19	1618	368	1388 0	66	145	274	22	149	12		20	16
2011-20	1566	379	1384 5	65	145	274	23	154	11		28	9
RGM1- H2	1583	296	1303 7	29	146	107	22	212	10		17	19
RGM1- H2	1586	280	1306 6	28	144	103	23	214	8	654	21	12

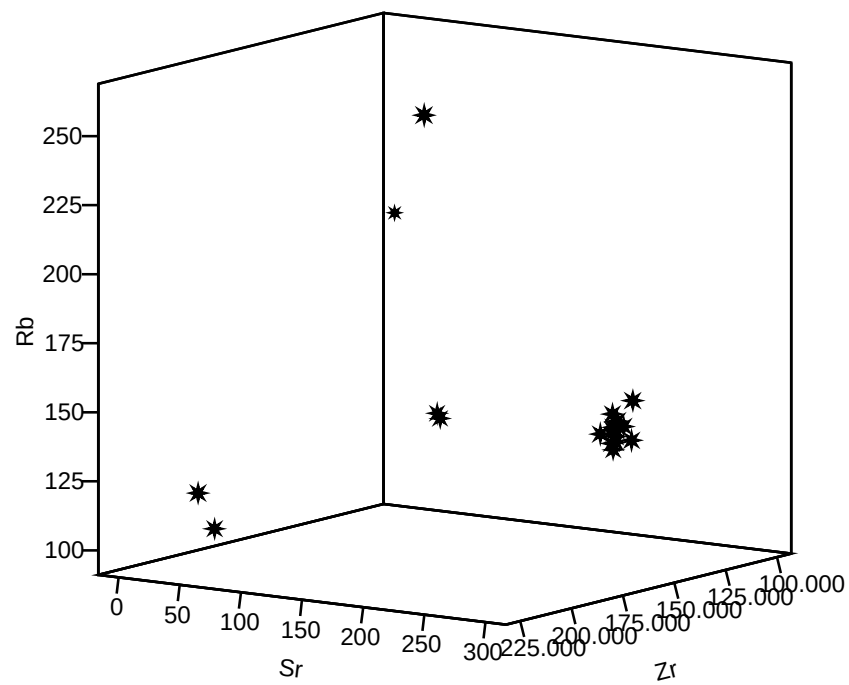


Figure 1. Sr, Rb, Zr three dimensional plot of the archaeological specimens.