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Table 1. Content of mineral in the pottery shards and clay samples

Sample	Mineral Content
ZR332/3	Quartz, syn SiO <sub>2</sub> Calcium Sodium Aluminum Silicate Ca <sub>0.8</sub> Na <sub>0.2</sub> Al <sub>1.8</sub> Si <sub>2.2</sub> O <sub>8</sub> Gypsum CaSO <sub>4</sub> .2H <sub>2</sub> O
ZR028/1	Quartz, syn SiO <sub>2</sub> Albite, calcian, ordered (Na,Ca)Al(Si,Al) <sub>3</sub> O <sub>8</sub> Dickite Al <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> (OH) <sub>4</sub> (HCONH <sub>2</sub> ) Haematite Fe <sub>2</sub> O <sub>3</sub>
ZR087/6	Quartz, syn SiO <sub>2</sub> Diopside Ca(Mg, Al)(Si, Al) <sub>2</sub> O <sub>6</sub> Anorthite, sodian, ordered (Ca,Na)(AlSi) <sub>2</sub> Si <sub>2</sub> O <sub>8</sub> Albite, disordered Na(Si <sub>3</sub> Al)O <sub>8</sub>
ZR077/2	Quartz, syn SiO <sub>2</sub> Diopside Ca(Mg, Al)(Si, Al) <sub>2</sub> O <sub>6</sub> Anorthite, sodian, ordered (Ca,Na)(AlSi) <sub>2</sub> Si <sub>2</sub> O <sub>8</sub> Albite, disordered Na(Si <sub>3</sub> Al)O <sub>8</sub>
ZR078/8	Quartz, syn SiO <sub>2</sub> Diopside Ca(Mg, Al)(Si, Al) <sub>2</sub> O <sub>6</sub>
ZR079/5	Anorthite CaAl <sub>2</sub> Si <sub>2</sub> O <sub>8</sub> Andesine Na <sub>0.622</sub> Ca <sub>0.368</sub> Al <sub>1.29</sub> Si <sub>2.71</sub> O <sub>8</sub>
ZR080/4	Quartz, syn SiO <sub>2</sub> Diopside Ca(Mg, Al)(Si, Al) <sub>2</sub> O <sub>6</sub>
ZR081/2	Quartz, syn SiO <sub>2</sub> Diopside Ca(Mg, Al)(Si, Al) <sub>2</sub> O <sub>6</sub> Albite, calcian, ordered (Na,Ca)Al(Si,Al) <sub>3</sub> O <sub>8</sub>
ZR083/4	Quartz, syn SiO <sub>2</sub> Anorthite, ordered CaAl <sub>2</sub> Si <sub>2</sub> O <sub>8</sub> Labradorite Ca <sub>0.65</sub> Na <sub>0.35</sub> (Al <sub>1.65</sub> Si <sub>2.35</sub> O <sub>8</sub> ) Diopside Ca(Mg, Al)(Si, Al) <sub>2</sub> O <sub>6</sub>
ZR084/3	Quartz, syn SiO <sub>2</sub> Diopside Ca(Mg, Al)(Si, Al) <sub>2</sub> O <sub>6</sub>
ZR086/3	Quartz, syn SiO <sub>2</sub> Albite, calcian, ordered (Na,Ca)Al(Si,Al) <sub>3</sub> O <sub>8</sub> Anorthite CaAl <sub>2</sub> Si <sub>2</sub> O <sub>8</sub> Diopside Ca(Mg, Al)(Si, Al) <sub>2</sub> O <sub>6</sub>
ZR247/4	Quartz, syn SiO <sub>2</sub> Albite, calcian, ordered (Na,Ca)Al(Si,Al) <sub>3</sub> O <sub>8</sub> Anorthite CaAl <sub>2</sub> Si <sub>2</sub> O <sub>8</sub>

	Diopside $\text{Ca}(\text{Mg}, \text{Al})(\text{Si}, \text{Al})_2\text{O}_6$
	Andesine $\text{Na}_{0.622}\text{Ca}_{0.368}\text{Al}_{1.29}\text{Si}_{2.71}\text{O}_8$
ZR088/3	Quartz, syn $\text{SiO}_2$
	Diopside $\text{Ca}(\text{Mg}, \text{Al})(\text{Si}, \text{Al})_2\text{O}_6$
	Tephrite $(\text{Mg}, \text{Fe}, \text{Al}, \text{Ti})(\text{Ca}, \text{Fe}, \text{Na}, \text{Mg})(\text{Si}, \text{Al})_2\text{O}_6$
ZR089/2	Albite calcian low $(\text{Na}_{0.75}\text{Ca}_{0.25})(\text{Al}_{1.26}\text{Si}_{2.74}\text{O}_8)$
	Quartz, syn $\text{SiO}_2$
	Diopside $\text{Ca}(\text{Mg}, \text{Al})(\text{Si}, \text{Al})_2\text{O}_6$
ZR253/4	Anorthite, ordered $\text{CaAl}_2\text{Si}_2\text{O}_8$
	Quartz, syn $\text{SiO}_2$
	Albite, calcian, ordered $(\text{Na}, \text{Ca})\text{Al}(\text{Si}, \text{Al})_3\text{O}_8$
	Diopside $\text{Ca}(\text{Mg}, \text{Al})(\text{Si}, \text{Al})_2\text{O}_6$
	Pyrocene $(\text{Mg}_{0.998}\text{Fe}_{0.002})(\text{Ca}_{0.999}\text{Fe}_{0.028})(\text{Si}_2\text{O}_6)$
ZR253/2	Andesine $\text{Na}_{0.622}\text{Ca}_{0.368}\text{Al}_{1.29}\text{Si}_{2.71}\text{O}_8$
	Quartz, syn $\text{SiO}_2$
	Palladium (H-Loaded), syn Pd
	Cuprite $\text{Cu}_2\text{O}$
	Giniite, ferric, syn $\text{Fe}_5(\text{PO}_4)_4(\text{OH})_3 \cdot 2\text{H}_2\text{O}$
ZR093/2	Gypsum $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
	Quartz, syn $\text{SiO}_2$
	Diopside $\text{Ca}(\text{Mg}, \text{Al})(\text{Si}, \text{Al})_2\text{O}_6$
ZR094/1	Anorthite, ordered $\text{CaAl}_2\text{Si}_2\text{O}_8$
	Quartz, syn $\text{SiO}_2$
	Calcite $\text{CaCO}_3$
	Albite high $(\text{K}_{0.02}, \text{Na}_{0.78})(\text{AlSi}_3\text{O}_8)$
ZR271/5	Diopside $\text{Ca}(\text{Mg}, \text{Al})(\text{Si}, \text{Al})_2\text{O}_6$
	Quartz, syn $\text{SiO}_2$
	Diopside $\text{Ca}(\text{Mg}, \text{Al})(\text{Si}, \text{Al})_2\text{O}_6$
	Anorthite, sodian, ordered $(\text{Ca}, \text{Na})(\text{AlSi})_2\text{Si}_2\text{O}_8$
	Albite, disordered $\text{Na}(\text{Si}_3\text{Al})\text{O}_8$
ZR369/8	Quartz, syn $\text{SiO}_2$
	Calcium Sodium Aluminum Silicate $\text{Ca}_{0.8}\text{Na}_{0.2}\text{Al}_{1.8}\text{Si}_{2.2}\text{O}_8$
	Gypsum $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
ZR061/4	Quartz, syn $\text{SiO}_2$
	Diopside $\text{Ca}(\text{Mg}, \text{Al})(\text{Si}, \text{Al})_2\text{O}_6$
Ghulaman	Quartz, syn $\text{SiO}_2$
	Diopside $\text{Ca}(\text{Mg}, \text{Al})(\text{Si}, \text{Al})_2\text{O}_6$
	Albite, calcian, ordered $(\text{Na}, \text{Ca})\text{Al}(\text{Si}, \text{Al})_3\text{O}_8$
Clay A	Quartz, syn $\text{SiO}_2$
	Calcite, $\text{CaCO}_3$
	Clinochlore-1MIIb, ferroan, $(\text{Mg}, \text{Fe})_6(\text{Si}, \text{Al})_4\text{O}_{10}(\text{OH})_8$
	Muscovite, $\text{KAl}_2\text{Si}_3\text{AlO}_{10}$
	Dolomite $\text{CaMg}(\text{CO}_3)_2$
	Chamosite $(\text{Mg}_{5.036}\text{Fe}_{4.964})\text{Al}_{2.724}(\text{Si}_{5.70}\text{Al}_{2.30}\text{O}_{20})(\text{OH})_{16}$
Clay B	Albite, calcian, ordered, $(\text{Na}, \text{Ca})\text{Al}(\text{Si}, \text{Al})_3\text{O}_8$
	Quartz, syn $\text{SiO}_2$
	Calcite, $\text{CaCO}_3$
	Clinochlore-1MIIb, ferroan, $(\text{Mg}, \text{Fe})_6(\text{Si}, \text{Al})_4\text{O}_{10}(\text{OH})_8$

Muscovite,  $KAl_2Si_3AlO_{10}$   
 Dolomite  $CaMg(CO_3)_2$   
 Chamosite  $(Mg_{5.036}Fe_{4.964})Al_{2.724}(Si_{5.70}Al_{2.30}O_{20})(OH)_{16}$   
 Albite, calcian, ordered,  $(Na, Ca)Al(Si,Al)_3O_8$

Table 2. Content of major elements in the pottery shards and clay samples

Sample	Dry Weight (%)									
	Si	Al	Ca	Fe	Mg	Mn	Na	K	Ti	P <sub>2</sub> O <sub>5</sub>
ZR332/3	77.56	3.13	1.52	0.48	0.93	0.02	4.85	1.32	0.11	0.09
ZR028/1	56.32	16.73	4.10	7.64	4.84	0.09	1.34	3.02	0.77	0.14
ZR087/6	52.04	15.08	9.78	6.52	5.07	0.12	2.19	2.55	0.67	0.20
ZR077/2	52.37	15.43	9.07	6.31	6.10	0.10	2.01	2.58	0.64	0.12
ZR078/8	43.98	13.16	13.64	6.04	5.02	0.14	2.16	2.27	0.58	0.41
ZR079/5	48.75	14.59	12.28	6.00	7.04	0.11	3.12	1.20	0.63	0.23
ZR080/4	54.76	12.55	10.21	5.12	6.68	0.10	2.56	2.09	0.52	0.31
ZR081/2	50.45	14.76	7.90	6.60	4.99	0.10	2.28	2.62	0.64	0.91
ZR083/4	50.59	15.34	8.77	7.38	4.29	0.11	1.41	3.20	0.69	0.31
ZR084/3	48.83	14.57	12.81	6.42	5.49	0.13	1.82	2.39	0.71	0.31
ZR086/3	55.18	15.22	6.68	6.10	4.93	0.11	2.43	3.19	0.62	0.26
ZR247/4	54.68	15.95	8.71	6.35	5.34	0.10	2.32	2.47	0.61	0.25
ZR088/3	53.98	12.79	11.78	5.16	5.48	0.09	2.53	1.90	0.58	0.16
ZR089/2	47.93	14.33	11.57	6.32	5.27	0.11	2.86	1.81	0.66	0.18
ZR253/1	53.15	16.75	8.53	6.87	5.79	0.12	2.02	2.74	0.66	0.13
ZR253/4	49.67	14.96	11.22	6.76	4.67	0.13	1.32	2.93	0.72	0.18
ZR093/2	53.59	15.79	9.18	6.28	5.02	0.11	1.98	2.81	0.61	0.42
ZR094/1	43.36	13.46	11.20	5.20	6.92	0.10	2.01	2.13	0.50	0.18
ZR271/5	53.51	14.60	9.43	6.21	4.73	0.13	2.26	2.31	0.67	0.15
ZR369/8	78.98	3.88	2.23	0.79	1.18	0.02	5.47	1.46	0.12	0.09
ZR061/4	45.49	11.66	12.92	5.06	7.17	0.09	2.52	1.56	0.53	0.33
Ghulaman	50.51	16.67	6.11	7.82	4.90	0.12	2.10	3.25	0.75	0.38
Clay A	45.56	13.14	12.94	6.95	4.57	0.13	0.87	2.60	0.78	0.15
Clay B	45.47	13.03	13.80	6.45	4.74	0.13	0.88	2.57	0.72	0.14



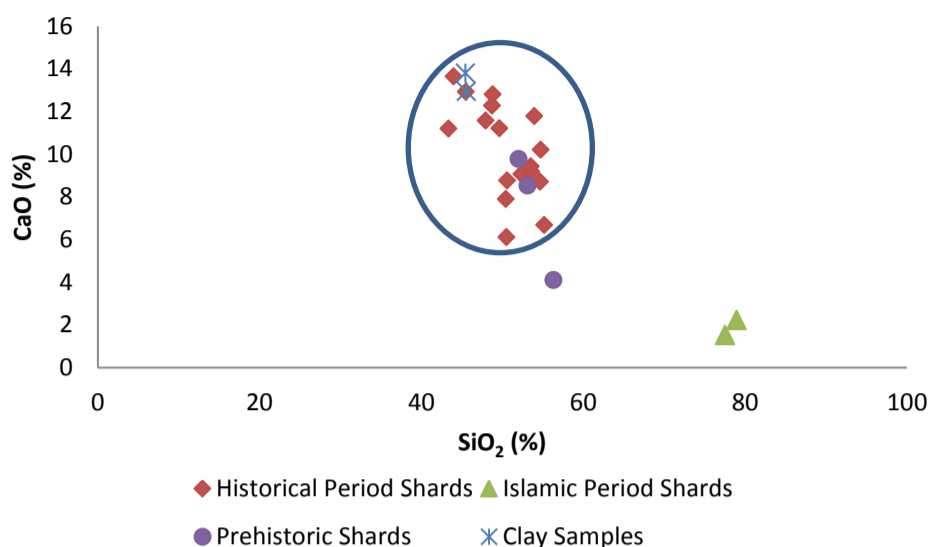


Figure 1. Scatter plot of the SiO<sub>2</sub> and CaO percentage of the pottery shards from several sites at Sistan, Iran

Table 3. Content of trace elements in the pottery shards and clay samples

Sample	ppm (µg/g)									
	Pb	Cu	Ba	Sr	Zr	Rb	Zn	SO <sub>3</sub>	Cl	Co
ZR332/3	1500	200	3000	216	100	15	58	2400	2300	100
ZR028/1	nd	89	400	306	200	104	200	1100	400	nd
ZR087/6	nd	68	400	415	100	90	100	1300	600	nd
ZR077/2	nd	88	500	425	100	108	100	2700	800	14
ZR078/8	nd	61	600	900	400	118	nd	22700	1200	nd
ZR079/5	nd	66	nd	406	200	38	100	900	800	24
ZR080/4	nd	56	nd	510	100	66	200	2200	800	28
ZR081/2	nd	79	500	1000	400	123	100	7000	2500	34
ZR083/4	nd	70	500	305	100	125	300	500	200	nd
ZR084/3	nd	81	500	424	200	105	100	1600	400	nd
ZR086/3	nd	62	500	432	100	107	100	3100	4000	29
ZR247/4	nd	46	600	514	100	104	100	1000	500	nd
ZR088/3	nd	51	600	519	200	69	100	700	500	nd
ZR089/2	nd	63	nd	411	100	87	100	2300	1600	nd
ZR253/1	nd	72	600	419	100	113	200	700	400	nd
ZR253/4	nd	84	500	526	200	115	100	1400	600	nd
ZR093/2	nd	68	600	529	100	118	100	1500	900	nd
ZR094/1	nd	70	800	700	500	63	200	8000	1300	21
ZR271/5	nd	67	400	312	100	104	100	600	800	32
ZR369/8	3700	57	4500	323	200	24	nd	3200	4100	300
ZR061/4	nd	94	400	1100	400	52	nd	16000	2200	nd
Ghulaman	nd	90	600	320	100	107	nd	1800	2000	40
Clay A	nd	83	nd	325	96	98	110	2000	100	4
Clay B	nd	80	nd	330	100	109	100	500	nd	nd

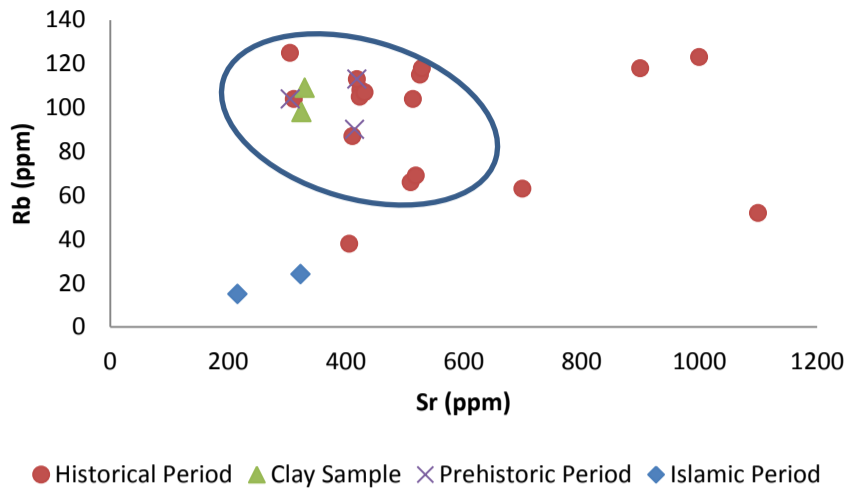


Figure 2. Scatter plot of the strontium and rubidium concentration of the pottery shards from several sites at Sistan, Iran

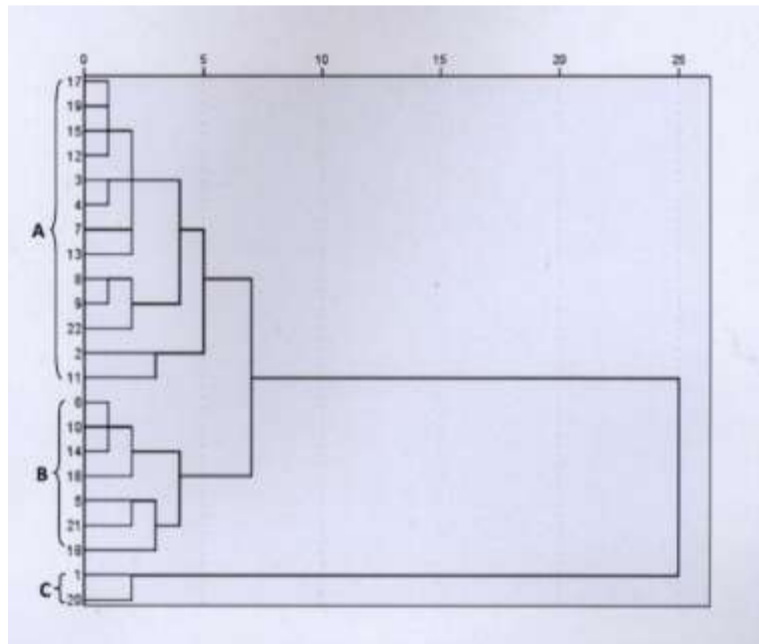


Figure 3. Hierarchical agglomerative clustering of the SiO<sub>2</sub> and CaO percentage of the pottery shards from several sites at Sistan, Iran



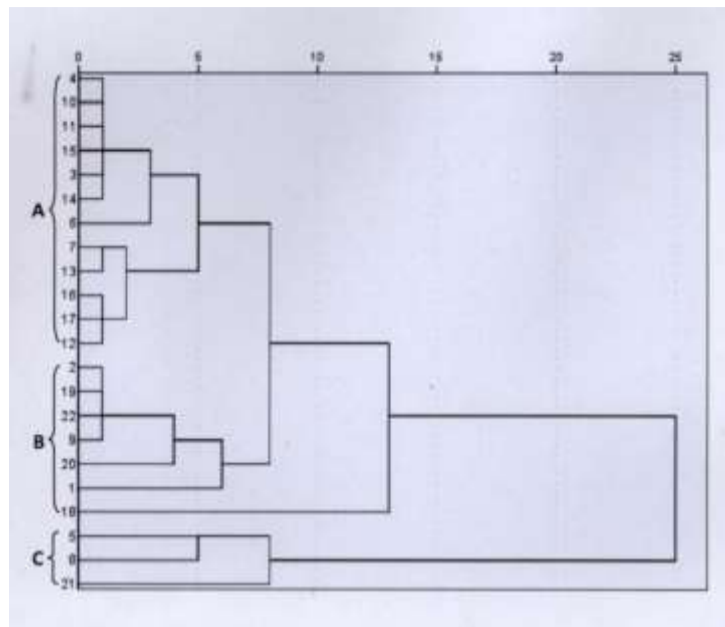


Figure 4. Hierarchical agglomerative clustering of the Strontium and Rubidium concentration of the pottery shards from several sites at Sistan, Iran