Micro-Raman analysis of ancient silver coins:

digging into composition, corrosion products and surface morphology.

Nicolas Gros[1,2], Olivier Deparis[1,3], Christophe Flament[2], Laurent Houssiau[1], Alexandre Mayer[1,3], Nicolas Ruffini-Ronzani[2], Julien Colaux[1], Francesca Cecchet[1]

[1]Namur Institute of Structured Matter (NISM) [2]Patrimoine, Transmissions, Héritages (PaTHs), [3]Namur Institue for Complexe Systems (naXys) University of Namur, Namur, Belgium

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Proposed assignments

α-PbO

Wavenumber (cm^{-1})	Vibrational mode	References	
		Exp.	Calc.
82	E_g	1	4
147	A_{1g}	1	4
341	B_{1g}	1	4
979	ν_s(S-O) / A_g from Ag_2SO_3/Ag_2SO_4 ?	2, 3	
1050	Pb_3O_4 ?	1	

Ag_2O/Ag_2S

Wavenumber (cm^{-1})	Vibrational mode	References	
		Exp.	Calc.
228 — 240	$\nu(AgO_2)$ / $\Gamma'_{2,5}$ / F_{2g} from Ag_2O	2, 3	5, 6
	ν_s(Ag-S-Ag) / Ag from β-Ag_2S	2	7
1100 — 1650	Fats ?		

Ag^{2+} ; SO_3^{2-}/SO_4^{2-}

Wavenumber (cm^{-1})	Vibrational mode	References	
		Exp.	Calc.
138	T' lattice modes from Ag^+	2, 3	
438	δ_s(O-S-O) / A_g from Ag_2SO_3/Ag_2SO_4	2, 3	8
461	δ_s(O-S-O) / A_g from Ag_2SO_3/Ag_2SO_4	2, 3	8
604	δ_a(S-O) / B_{3g}+B_{2g} from Ag_2SO_3/Ag_2SO_4	2, 3	8
632	δ_a(S-O) / B_{1g} from Ag_2SO_3/Ag_2SO_4	2, 3	8
967	ν_s(S-O) / A_g from Ag_2SO_3/Ag_2SO_4	2, 3	8

α-Quartz

Wavenumber (cm^{-1})	Vibrational mode	References	
		Exp.	Calc.
127	E (LO+TO)	9	
147			
204	A_1	9	
264	E (LO+TO)	9	
355	A_1	9	
394	E (TO)	9	
402	E (LO)	9	
464	A_1	9	
697	E (LO+TO)	9	
807	E (LO)	9	
978			
1066	E (TO)	9	
1160	E (LO+TO)	9	

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