

substance: Ti₂O₃

property: wavenumbers of lattice modes

IR active modes at RT (2A_{2u} and 4E_u)

(ν/c) _{TO} (E _u)	280 cm ⁻¹	oscillator strength	0.15	from IR reflection spectrum	77L
	376 cm ⁻¹		5.15		
	451 cm ⁻¹		8.88		
	511 cm ⁻¹		0.43		
(ν/c) _{LO} (E _u)	281 cm ⁻¹				
	391 cm ⁻¹				
	502 cm ⁻¹				
	537 cm ⁻¹				
(ν/c) _{TO} (A _{2u})	343 cm ⁻¹	oscillator strength	3.0		
	448 cm ⁻¹		13.4		
(ν/c) _{LO} (A _{2u})	351 cm ⁻¹				
	552 cm ⁻¹				

Raman active modes at RT (2A_{1g} and 5E_g)

(ν/c) _R (E _g)	279 cm ⁻¹	274 cm ⁻¹	the low-frequency E _g and A _{1g} modes show pronounced softening (Fig. 1) as the temperature is raised; first column [74S], second column [71M]
	308 cm ⁻¹	302 cm ⁻¹	
	350 cm ⁻¹	347 cm ⁻¹	
	465 cm ⁻¹	452 cm ⁻¹	
	567 cm ⁻¹	564 cm ⁻¹	
(ν/c) _R (A _{1g})	238 cm ⁻¹	228 cm ⁻¹	
	513 cm ⁻¹	530 cm ⁻¹	

References:

- 71M Mooradian, A., Raccah, P. M.: Phys. Rev. B3 (1971) 4253.
- 74S Shin, S. H., Aggarwal, R. L., Lax, B., Honig, J. M.: Phys. Rev. B9 (1974) 583.
- 77L Lucovsky, G., Sladek, R. J., Allen, J. W.: Phys. Rev. B16 (1977) 5452.

Fig. 1.

Ti_2O_3 . Wavenumbers of Raman frequencies vs. temperature [74S].

