

Raman Spectra of Chromate Ion

Shigeyuki Aono, Akira Sadô, Kozo Chihara, and Eiko Kanzin*
*Department of Chemistry, Faculty of Science, Kanazawa
University, Kanazawa, Japan*

Abstract The laser-Raman spectra of chromate anion are reported. The Raman shifts are 288, 352, 837, and 880 cm^{-1} .

Introduction

It is an advantage of the use of He-Ne gas laser for the exciting light source of Raman spectroscopy that the observation of the colored substances becomes possible. We observed the Raman spectrum of potassium chromate in aqueous solution and got the result being different from the reference papers,^{1,2)} in which the mercury lamp had been used as the exciting light source.

Apparatus

Light Source; The gas laser source purchased from Nippon Denki Co. was operated with output power of 15 mw.

Detection; (1) Photographic method --- The same spectro-photometer as one reported by Nakamura³⁾ and the photographic plate of Eastman Kodak FI was used.

(2) Pen-recording method --- The spectrometer was rearranged to the photoelectric detection according to the paper of Tonomura and Horita⁴⁾. The Raman scattering light was detected by the Hamamatsu Television photomultiplier tube, model R 136, amplified by NF lock-in amplifier, model FI 571, and recorded by Toa Electronics electro poly recorder, model EPR 2T.

Result

The mean values of wave number of Raman shift which has been observed by photographic and the pen-recording methods are found in Table 1. It is emphasized that the Raman spectroscopic data by using the mercury lamp may have to be reexamined.

* Present address; Rojo Junior High School, Komatsu, Japan

Table 1 Raman Shift of Chromate Ion

Present work	Raman Shift (in cm^{-1})		Assignment
	Previous	results	
288	485 ^a	350 ^b	E
352	510	390	F ₂
837	858	845	A ₁
880	875	895	F ₂

a) Reference 1 in text.

b) Reference 2 in text.

References

- 1) A. Eucken and K. H. Hellwege, "Landolt-Börnstein Zahlenwerte und Funktionen aus Physik, Chemie, Astronomie, Geophysik und Technik", 6. Aufl., Band I, Teil 2, Springer-Verlag, Berlin (1951) p. 258.
- 2) T. Dupuis, *Compt. rend.*, **246**, 3332 (1958) and *ibid.*, **250**, 1237 (1960).
- 3) I. Nakamura, *Nippon Kagaku Zasshi*, **83**, 1096 (1962).
- 4) T. Tonomura and K. Horita, *Nippon Kagaku Zasshi*, **87**, 229 (1966).