

## Vibrational spectra of 2, 3 and 2, 6 dichloro anilines

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**Abstract.** The infrared and laser Raman spectra of 2,3 dichloro aniline and 2,6 dichloro aniline have been recorded. The vibrational spectra have been analysed assuming  $C_s$  and  $C_{2v}$  point groups for 2,3 dichloro aniline and 2,6 dichloro aniline respectively. Assignments for fundamental vibrations, combination and overtone frequencies and internal modes of vibration of amino group have been proposed.

**Keywords.** Raman spectra; infrared spectra; dichloro anilines; stretching; bending.

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### 1. Introduction

Infrared spectra of 2, 4 and 2, 5 dichloro anilines have been reported earlier (Srivastava 1967; Singh and Singh 1968; Singh and Singh 1983). IR spectra of 2, 6 dichloro aniline have been reported by Singh and Singh (1969). However, the Raman spectra of the same compound have not been investigated so far. The spectra of 2, 3 dichloro aniline have also not been reported so far. The aim of this work is to obtain all the vibrational frequencies and propose assignments for 2, 3 and 2, 6 dichloro anilines.

### 2. Experimental

The compounds 2, 3 dichloro aniline (in liquid state at room temperature) and 2, 6 dichloro aniline (in solid state at room temperature) were obtained from Fluka AG, Switzerland. These compounds were in pure state and used without further purification. The IR spectra were recorded on a double beam grating spectrophotometer (Pye-Unicam SP, model 2000) in the range of  $200\text{ cm}^{-1}$  to  $4000\text{ cm}^{-1}$ . The Raman spectra have been recorded on argon ion laser Raman or HG-2S (Jobin-Yvon, France) in the range of  $10\text{ cm}^{-1}$  to  $4000\text{ cm}^{-1}$ . The accuracy of measurements was  $\pm 5\text{ cm}^{-1}$ . The Raman spectrum was recorded with the incident beam parallel and perpendicular to the plane of polarization separately, so that the intensity ratios in the two types of traces for each band could give the nature of polarization of each band.

### 3. Results and discussion

As the local symmetry of the benzene ring is not much affected by the substituents, we assume  $\text{NH}_2$  group as a mass point (Randle and Whiffen 1956) and the total number of