DAVI RC62 0088

Reprinted from the JOURNAL OF CHEMICAL PHYSICS, Vol. 37, No. 4, 848–853, August 15, 1962
Printed in U. S. A.

Pressure Dependence of Fluorescence Spectra. IV. Effects of Vibrational Energy Transfer between Fluorescing Molecules*

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(Received April 12, 1962)

Vibrational relaxation of a system of s-dimensional degenerate harmonic oscillators is investigated. The oscillators are impulsively excited and are then allowed to relax to thermal equilibrium by collisions with a heat bath and by transfer of vibrational quanta among themselves. The model is applicable to analysis of experimental data in which excited molecules are produced in concentrations not negligible in comparison to the concentration of heat-bath molecules.

INTRODUCTION

MOST of the work which has been done to date on vibrational energy transfer of molecules in the gas phase has been concerned with oscillators present in trace amounts and transferring energy only by colli-

* This work was supported by a grant from the National Science Foundation.