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Sommario/riassunto	"This book describes different theoretical models developed to identify the near and mid infrared (IR) spectra of diatomic molecules isolated in the gas phase or subjected to environmental constraints, useful for the study of environmental sciences, planetology and astrophysics. The Van Vleck contact transformation method is presented to complement the standard approach generally applied in the calculation and analysis of IR transitions between vibration-rotation energy levels. The semi-classical model of Robert and Bonamy, as well as the extended substitution model of Lakhlifi-Dahoo applied to environmental spectroscopy, are described in the framework of the Liouville formalism and the profiles of diatomic lines and their isotopologues subjected to environmental constraints are calculated by applying the cumulant expansion. The applications presented in this book show how molecular interactions modify the near and mid IR spectra of isolated diatomics under the effect of pressure, a nano-cage (substitution site, Clathrate, Fullerene, Zeolite) or surfaces, to identify the characteristics

of the perturbing environment"--Back cover