

## Structure Data of Free Polyatomic Molecules

<b>147</b>	<b>Cl<sub>2</sub>Ni</b>	<b>Nickel dichloride</b>	<b>D<sub>∞h</sub></b>
LIF		Nickel(II) chloride	NiCl <sub>2</sub>

State	$\tilde{X} \ ^3\Sigma_g^-$	$^3\Pi_u$
Energy [eV]	0.00	
$r_0(\text{Ni-Cl})$ [Å] <sup>a)</sup>	2.05317(14)	2.09435(13)

NiCl<sub>2</sub> molecules were produced in a free-jet expansion through a heated nozzle. Bands in the 460 nm region were excited using a CW ring dye laser. Rotational analyses were carried out on the basis of a  $^3\Pi_u - ^3\Sigma_g^-$  transition for three isotopomers,  $^{58}\text{Ni}^{35}\text{Cl}_2$ ,  $^{58}\text{Ni}^{35}\text{Cl}^{37}\text{Cl}$  and  $^{60}\text{Ni}^{35}\text{Cl}_2$ .

Evidence is presented from the nickel isotope shifts to show that the excited state is vibronically induced through the bending vibration and probably is derived from a  $^3\Delta_g$  state.

<sup>a)</sup> The error limits in the bond lengths reflect the standard deviations in the rotational constants.

Ashworth, S.H., Grieman, F.J., Brown, J.M.: J. Chem. Phys. **104** (1996) 48.

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