PG No. 36 $D_{3d}(1)$ $\bar{3}m$ (-31m setting) [trigonal]

* character table

$D_{3d}(1)$	$1(1)$	$2_{120}(3)$	$3^+_{001}(2)$	$-1(1)$	$m_{120}(3)$	$-3^+_{001}(2)$
A_{1g}	1	1	1	1	1	1
A_{2g}	1	−1	1	1	−1	1
E_g	2	0	−1	2	0	−1
A_{1u}	1	1	1	−1	−1	−1
A_{2u}	1	−1	1	−1	1	−1
E_u	2	0	−1	−2	0	1

* polar ↔ axial conversion

A_{1g} (A_{1u}) A_{2g} (A_{2u}) E_g (E_u) A_{1u} (A_{1g}) A_{2u} (A_{2g}) E_u (E_g)

* symmetric product

	A_{1g}	A_{2g}	E_g	A_{1u}	A_{2u}	E_u
A_{1g}	A_{1g}	A_{2g}	E_g	A_{1u}	A_{2u}	E_u
A_{2g}		A_{1g}	E_g	A_{2u}	A_{1u}	E_u
E_g			$A_{1g}+E_g$	E_u	E_u	$A_{1u}+A_{2u}+E_u$
A_{1u}				A_{1g}	A_{2g}	E_g
A_{2u}					A_{1g}	E_g
E_u						$A_{1g}+E_g$

* anti-symmetric product

A_{1g}	A_{2g}	E_g	A_{1u}	A_{2u}	E_u
–	–	A_{2g}	–	–	A_{2g}