PG No. 29 $T_{\rm h}$ $m\bar{3}$ [cubic]

* character table

$T_{\rm h}$	$1(1)$	$2_{001}(3)$	$3^+_{111}(8)$	$-1(1)$	$\mathrm{m}_{001}(3)$	$-3^+_{111}(8)$
A_g	1	1	1	1	1	1
E_g	2	2	-1	2	2	-1
T_g	3	-1	0	3	-1	0
A_u	1	1	1	-1	-1	-1
E_u	2	2	-1	-2	-2	1
T_u	3	-1	0	-3	1	0

* polar $\leftrightarrow$ axial conversion

A_g (A_u) $\quad E_g$ (E_u) $\quad T_g$ (T_u) $\quad A_u$ (A_g) $\quad E_u$ (E_g) $\quad T_u$ (T_g)

* symmetric product

	A_g	E_g	T_g	A_u	E_u	T_u
A_g	A_g	E_g	T_g	A_u	E_u	T_u
E_g		$A_g + E_g$	$2T_g$	E_u	$2A_u + E_u$	$2T_u$
T_g			$A_g + E_g + T_g$	T_u	$2T_u$	$A_u + E_u + 2T_u$
A_u				A_g	E_g	T_g
E_u					$A_g + E_g$	$2T_g$
T_u						$A_g + E_g + T_g$

* anti-symmetric product

A_g	E_g	T_g	A_u	E_u	T_u
$-$	A_g	T_g	$-$	A_g	T_g