Training course in symmetry and group theory
Common specialized subject of the Graduate Institute for Advanced Studies, SOKENDAI
Lecturer: Prof. Massimo Nespolo, Université de Lorraine, France
List of crystallographic symbols

a	①[10] axis and cell parameter (2D space). ②[100] axis and cell parameters (3D space). ③g(½,0,0) glide reflection and glide plane.
a	①[10] basis vector (2D space). ②[100] basis vector (3D space).
A	Unit cell of the 3D space that includes the lattice translation t(0,½,½). Multiplicity 2.
b	①[01] axis and cell parameter (2D space). ②[010] axis and cell parameters (3D space). ③*g*(0,½,0) glide reflection and glide plane.
b	①[01] basis vector (2D space). ②[010] basis vector (3D space).
B	Unit cell of the 3D space that includes the lattice translation t(½,0,½). Multiplicity 2.
c	①[001] axis and cell parameters (3D space).. ② Unit cell of the 2D space that includes the lattice translation t(½,½). Multiplicity 2. ③ *g*(0,0,½) glide reflection and glide plane
c	[001] basis vector.
C	Unit cell of the 3D space that includes the lattice translation t(½,½,0). Multiplicity 2.
d	Glide reflection with glide component of ¼ of the diagonal. Also, the corresponding glide plane. Occurs only in centred cells.
D	Unit cell of the 3D space that includes the lattice translations t(⅓,⅓,⅓) and t(⅔,⅔,⅔). Multiplicity 3. Rhombohedral description of the hexagonal cell. Rarely used, mostly of historical interest.
e	Glide plane with two glide reflection with mutually perpendicular glide components. Occurs only in centred cells.
F	Unit cell of the 3D space that includes the lattice translations t(½,½,0) and t(½,0,½). Multiplicity 4.
g	General symbol for a glide reflection. Also, the corresponding glide line (2D space) or glide plane (3D space).
H	Unit cell of the 3D space that includes the lattice translations t(⅔,⅓,0) and t(⅓,⅔,0). Multiplicity 3. Rarely used.
(*hkl*)	Miller indices of a plane in direct space.
hkl	①Coordinates of a node of the reciprocal space. ②Laue indices of a diffraction.
(*hkil*)	Bravais-Miller indices of a plane in direct space. Only used when a hexagonal coordinate system is adopted.
I	Unit cell of the 3D space that includes the lattice translation t(½,½,½). Multiplicity 2.
m	Mirror reflection, mirror line (2D space), mirror plane (3D space).

n	Glide reflection with glide component of ½ of the diagonal. Also, the corresponding glide plane.
p	Primitive unit cell of the 2D space. Multiplicity 1.
P	Primitive unit cell of the 3D space. Multiplicity 1.
R	Unit cell of the 3D space that includes the lattice translations t(⅔,⅓,⅓) and t(⅓,⅔,⅔). Multiplicity 3. Hexagonal description of the rhombohedral cell.
S	General symbol of *A*, *B* or *C*.
t	Symbol generally used for “translation”.
uvw	Coordinated of a direct lattice node.
[*uvw*]	Indices of a lattice direction in the direct space.
X	Any unit different from those uniquely defined (*P, A, B , C, S, I, F, R, D, H*). Used and defined when necessary.
xyz	Coordinates of a point in direct space. Mainly used to indicate an atomic position in the unit cell.

Last update: 7th August 2026