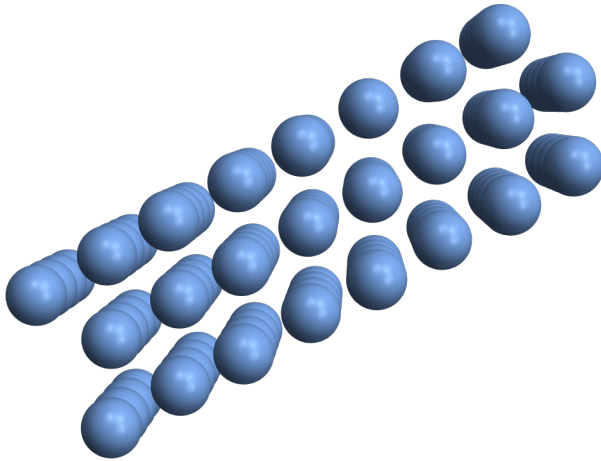


```
In[ ]:= << "Crystallica`"
```

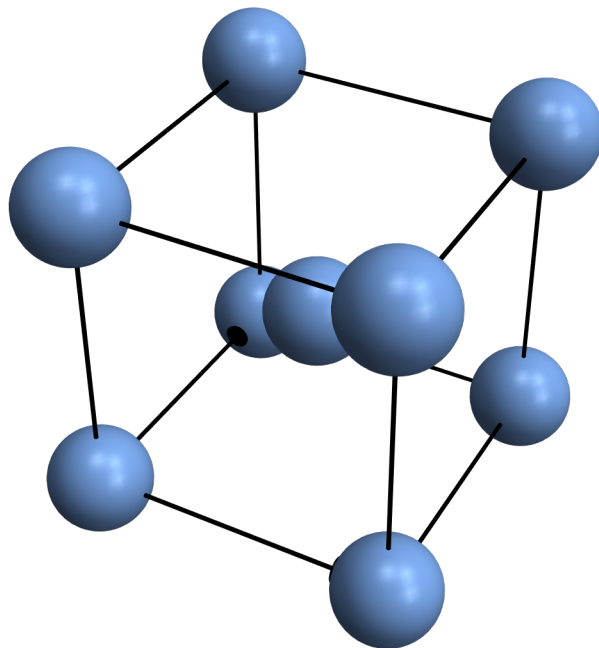
```
In[ ]:= With[{atoms = Flatten[Join[Table[{i, 0, 0}, {i, 4}], Table[{i + 0.5, 1, 0}, {i, 4}]]], 0},
  imax = 4, CrystalPlot[Flatten[Join[Table[{0, 2 i, 0} + # & /@ atoms, {i, imax}],
    Table[{0 + 0.5, 2 i + 0.5, 1} + # & /@ atoms, {i, imax}],
    Table[{0, 2 i, 2} + # & /@ atoms, {i, imax}]]], 1],
  Table[1, 3 imax Length[atoms]], BondRad -> 0, AtomRad -> 0.4]]
```

Out[ ]:=



```
In[ ]:= CrystalPlot[3 IdentityMatrix[3],
  Join[Flatten[Table[{i, j, k}, {i, 0, 1}, {j, 0, 1}, {k, 0, 1}], 2], {{0.5, 0.5, 0.5}}],
  Table[1, 9]]
```

Out[ ]:=

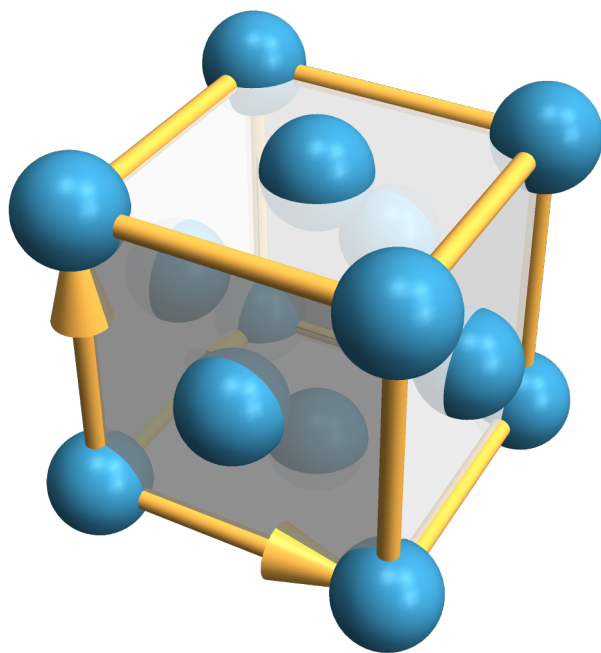


```

In[ ]:= Show[
  CrystalPlot[3 IdentityMatrix[3],
    Join[Flatten[Table[{i, j, k}, {i, 0, 1}, {j, 0, 1}, {k, 0, 1}], 2], {{0.5, 0.5, 0},
      {0.5, 0, 0.5}, {0, 0.5, 0.5}, {0.5, 0.5, 1}, {0.5, 1, 0.5}, {1, 0.5, 0.5}}],
    Table[1, 14],
    AtomCol → Lighter[RGBColor[5 / 255, 112 / 255, 164 / 255], 0.2],
    CellLineCol → RGBColor["#ffb94c"],
    CellLineRad → 0.1],
  Graphics3D[
    {Opacity[0.8],
      Thickness[0],
      Cuboid[{0, 0, 0}, {3, 3, 3}]}]]

```

Out[ ]:=



```

In[ ]:= Export["C:\\Users\\willo\\Documents\\Uni\\Year
  4\\Introduction to Condensed Matter\\Notes\\Images\\fcc-crystal.pdf",
  %, "AllowRasterization" → True, ImageSize → 360, ImageResolution → 600]

```

```

Out[ ]:= C:\\Users\\willo\\Documents\\Uni\\Year
  4\\Introduction to Condensed Matter\\Notes\\Images\\fcc-crystal.pdf

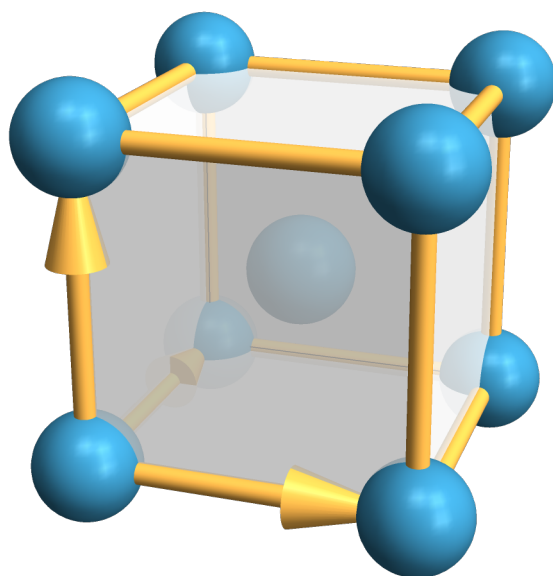
```

```

In[ ]:= Show[
  CrystalPlot[3 IdentityMatrix[3],
    Join[Flatten[Table[{i, j, k}, {i, 0, 1}, {j, 0, 1}, {k, 0, 1}], 2], {{0.5, 0.5, 0.5}}],
    Table[1, 9],
    AtomCol → Lighter[RGBColor[5 / 255, 112 / 255, 164 / 255], 0.2],
    CellLineCol → RGBColor["#ffb94c"],
    CellLineRad → 0.1],
  Graphics3D[
    {Opacity[0.8],
      Thickness[0],
      Cuboid[{0, 0, 0}, {3, 3, 3}]}],
  ViewPoint → {0.9903231323278796`, -3.0236035887146295`, 1.1519902047709918`}]]

```

Out[ ]:=



```

In[ ]:= Export["C:\\Users\\willo\\Documents\\Uni\\Year
  4\\Introduction to Condensed Matter\\Notes\\Images\\bcc-crystal.pdf",
  %, "AllowRasterization" → True, ImageSize → 360, ImageResolution → 600]

```

```

Out[ ]:= C:\\Users\\willo\\Documents\\Uni\\Year
  4\\Introduction to Condensed Matter\\Notes\\Images\\bcc-crystal.pdf

```

```

CrystalPlot[3 IdentityMatrix[3],
  {{0, 0, 0}, {0, 1, 0}, {1, 1, 0}, {1, 0, 0}, {0, 0, 1}, {0, 1, 1}, {1, 1, 1},
  {1, 0, 1}, {0.5, 0.5, 0}, {0.5, 0, 0.5}, {0, 0.5, 0.5}, {0.5, 0.5, 1},
  {0.5, 1, 0.5}, {1, 0.5, 0.5}, (**){0.5, 0, 0}, {0, 0.5, 0}, {0, 0, 0.5},
  {0.5, 0, 1}, {0, 0.5, 1}, {1, 0, 0.5}, {0.5, 1, 0}, {1, 0.5, 0}, {1, 0, 0.5},
  {0.5, 1, 1}, {1, 0.5, 1}, {1, 1, 0.5}, {0, 1, 0.5}, {0.5, 0.5, 0.5}},
  {1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2},
  BondRad → 0,
  AtomRad → {0.7, 0.4},
  AtomCol → {Lighter[RGBColor[5 / 255, 112 / 255, 164 / 255], 0.2], RGBColor["#ffb94c"]}]]

```

```

Export["C:\\Users\\willo\\Documents\\Uni\\Year
4\\Introduction to Condensed Matter\\Notes\\Images\\rocksalt.pdf",
%, "AllowRasterization" → True, ImageSize → 360, ImageResolution → 600]

CrystalPlot[3 IdentityMatrix[3], {{0, 0, 0}, {0, 1, 0}, {1, 1, 0}, {1, 0, 0},
{0, 0, 1}, {0, 1, 1}, {1, 1, 1}, {1, 0, 1}, (**){0.5, 0.5, 0.5}},
{1, 1, 1, 1, 1, 1, 1, 1, 2}, {BondRad → 0, AtomRad → {0.7, 0.8}},
AtomCol → {Lighter[RGBColor[5 / 255, 112 / 255, 164 / 255], 0.2], RGBColor["#ffb94c"]}]

Export["C:\\Users\\willo\\Documents\\Uni\\Year
4\\Introduction to Condensed Matter\\Notes\\Images\\CsCl.pdf",
%, "AllowRasterization" → True, ImageSize → 360, ImageResolution → 600]

CrystalPlot[3 IdentityMatrix[3], {{0, 0, 0}, {0, 1, 0}, {1, 1, 0},
{1, 0, 0}, {0, 0, 1}, {0, 1, 1}, {1, 1, 1}, {1, 0, 1}, {0.5, 0.5, 0},
{0.5, 0, 0.5}, {0, 0.5, 0.5}, {0.5, 0.5, 1}, {0.5, 1, 0.5}, {1, 0.5, 0.5}, (**)
{0.25, 0.25, 0.25}, {0.75, 0.75, 0.25}, {0.25, 0.75, 0.75}, {0.75, 0.25, 0.75}},
{1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2, 2}, AtomRad → {0.4, 0.4},
AtomCol → {Lighter[RGBColor[5 / 255, 112 / 255, 164 / 255], 0.2], RGBColor["#ffb94c"]}]

Export["C:\\Users\\willo\\Documents\\Uni\\Year
4\\Introduction to Condensed Matter\\Notes\\Images\\ZnS1.pdf",
%, "AllowRasterization" → True, ImageSize → 360, ImageResolution → 600]

CrystalPlot[3 IdentityMatrix[3], {{0, 0, 0}, {0, 1, 0}, {1, 1, 0},
{1, 0, 0}, {0, 0, 1}, {0, 1, 1}, {1, 1, 1}, {1, 0, 1}, {0.5, 0.5, 0},
{0.5, 0, 0.5}, {0, 0.5, 0.5}, {0.5, 0.5, 1}, {0.5, 1, 0.5}, {1, 0.5, 0.5}, (**)
{0.25, 0.25, 0.25}, {0.75, 0.75, 0.25}, {0.25, 0.75, 0.75}, {0.75, 0.25, 0.75}},
{1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2, 2},
AtomRad → {0.4, 0.4}, PolyMode[4] → True, PolyStyle[4] →
Directive[Opacity[0.3], EdgeForm[{Thick, Darker[RGBColor["#ffb94c"], 0.1]}]],
AtomCol → {Lighter[RGBColor[5 / 255, 112 / 255, 164 / 255], 0.2], RGBColor["#ffb94c"]}]

Export["C:\\Users\\willo\\Documents\\Uni\\Year
4\\Introduction to Condensed Matter\\Notes\\Images\\ZnS2.pdf",
%, "AllowRasterization" → True, ImageSize → 360, ImageResolution → 600]

```