

**Answer on** Question #61790, Physics / Solid State Physics

how crystal defects influences its mechanical, electrical and optical behaviour

**Solution:**

Mechanical behaviour

Defects in crystals reduce its strength.

Ways to improve strength:

- 1) reduce the number of defects (e.g., single crystals);
- 2) obstruct the movement of defects

Electrical behaviour

The presence of defects (donor or acceptor) significantly increases the electrical conductivity of semiconductors. Limit: one atom of defects at 10,000 atoms of basic substance.

Optical behaviour

Luminescence can be observed in semiconductor crystal with special additives (activators).