

Imperfections in Solids

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Density Computations for Ceramics

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Number of formula units/unit cell

$$\rho = \frac{n'(\Sigma A_C + \Sigma A_A)}{V_C N_A}$$

Avogadro's number

Volume of unit cell

ΣA_C = sum of atomic weights of all cations in formula unit

ΣA_A = sum of atomic weights of all anions in formula unit

Types of Imperfections

- Vacancy atoms
 - Interstitial atoms
 - Substitutional atoms
- Point defects
- Dislocations
- Line defects
- Grain Boundaries
- Area defects