

Microstructures of Binary Oxides with an Inverse Opal Structure Used as Photoelectrodes for Water Splitting

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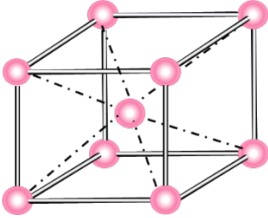
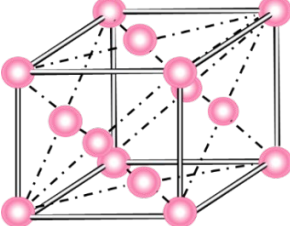
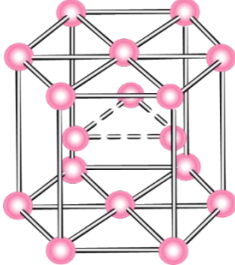
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Supplementary Information

Annexes

Crystal arrangement	Data
	<p>body centered cubic Number of spheres = 2 Sphere radius = 100 nm Number of spheres in $1 \mu\text{m}^3 = 162.3747$ Area of all spheres in $1 \mu\text{m}^3 = 20.4052 \mu\text{m}^2$</p>
	<p>face centered cubic Number of spheres = 4 Sphere radius = 100 nm Number of spheres in $1 \mu\text{m}^3 = 176.7766$ Area of all spheres in $1 \mu\text{m}^3 = 22.2144 \mu\text{m}^2$</p>
	<p>compact hex Number of spheres = 6 Sphere radius = 100 nm Number of spheres in $1 \mu\text{m}^3 = 176.7759$ Area of all spheres in $1 \mu\text{m}^3 = 22.2143 \mu\text{m}^2$</p>

Formula for the area of a sphere = $4\pi r^2$

Calcul for 1 micron.

Area of a sphere	Radius = $0.1 \mu\text{m}$	Area = $0.12566371 \mu\text{m}^2$
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Surface calculation

crystal arrangement	Edge	glass base area	Height	Volume
Body Centered Cubic	$a = \frac{4r}{\sqrt{3}}$ ¹	$A = a^2$ ¹	a ¹	$V = a^3$ ²
Cubic Face Centered	$a = \frac{4r}{\sqrt{2}}$ ¹	$A = a^2$ ¹	a ¹	$V = a^3$ ²
Compact Hex	$a = 2r$ ¹	$A = 3a^2 \cos 30^\circ$ ²	$c = 1.633a$ ²	$V = Ac$ ²

References

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2. Askeland, D.R.; Phule, P. P. in: *Materials Science and Engineering*. Edit. Thomson. Mexico. 4th Edition, **2004**.