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NPTEL

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Courses » Symmetry and Structure in the Solid State

Announcements **Course** Ask a Question Progress FAQ

Unit 16 - Powder Diffraction Method & Quantum Crystallography

Register for
Certification exam

Course outline

How to access
the portal

Basics of
Symmetry 1 :
Generation of
Point Groups

Basics of
Symmetry 2:
Detailed
Understanding
of 32 Point
Groups

Assignment of
Point Groups to
Crystal Systems
and Bravais
Lattice

Basics of
Symmetry 4:
Space Group
Description And
Introduction to
the International
Tables of
Crystallography(ITC-
Vol. A).

Correlation
Between
Symmetry
Diagrams and

Week 12 - Assignment 12

The due date for submitting this assignment has passed.

As per our records you have not submitted this **Due on 2019-04-24, 23:59 IST.** assignment.

1) What is the value of d_{111} for KCl with cell parameter $a = 6.27$ Angstrom **2 points**

- 3.50
 3.62
 3.75
 3.90

No, the answer is incorrect.

Score: 0

Accepted Answers:

3.62

2) At low temperature the volume of a crystal system contracts. **2 points**

What will happen to the powder diffraction lines at low temperature with respect to the room temperature lines?

- Shift to a higher angle
 No shift
 Shift to lower angle
 None of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

Shift to a higher angle

3) What happens to the crystallite size of a material if the width of the powder diffraction lines is large? **2 points**

Small

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Basics of X Ray Diffraction 1

Basics of X Ray Diffraction 2

Bragg's Law in Reciprocal Space

Structure Determination Methodologies 1

Structure Determination Methodologies 2

Powder Diffraction Method & Quantum Crystallography

- Powder Diffraction 1
- Powder Diffraction 2
- Powder Diffraction 3
- Quantum Crystallography 1
- Quantum Crystallography 2
- Intermolecular Interactions
- Quiz : Week 12 - Assignment 12

Accepted Answers:

Small

4) What frequency is Mo k-alpha radiation ($\lambda = 0.70926 \text{ \AA}$)? **2 points**
 [Ans* (10¹⁸) hertz [^ means " To the Power of"]]

- 1
- 2
- 3
- 4

No, the answer is incorrect.

Score: 0

Accepted Answers:

4

5) A wavelength of 0.7 Angstrom gives a powder X-ray diffraction(PXRD) pattern with a peak **2 points** at 0.1820 in sin(Theta). Where would this peak appear in sin(Theta) if the wavelength used is 1.4 Angstrom? **2 points**

- 0.264
- 0.364
- 0.464
- 0.164

No, the answer is incorrect.

Score: 0

Accepted Answers:

0.364

6) The absorption edge of Cu k-series radiation is 1.380 Å. What is the minimum KV setting **2 points** on the Xray generator required to produce Cu k-series radiation?

- 7
- 8
- 9
- 10

No, the answer is incorrect.

Score: 0

Accepted Answers:

9

7) First order reflection from (1, 0, 0) planes of the rock salt and KCl occurred at 5.9 degrees **2 points** and 5.3 degrees respectively. What is the value of (d100 KCl) / (d100 NaCl)?

- 1.11
- 2.22
- 3.33
- 4.44

No, the answer is incorrect.

Score: 0

Accepted Answers:

1.11

