

Course outline

How does an NPTEL online course work?

Week 0 :

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

● Lecture 46 : The element sulfur, principle of operation

● Lecture 47 : Advantages and disadvantages of Li – S batteries, positive electrodes

● Lecture 48 : Electrolyte and negative electrode for Li – S battery

● Lecture 49 : State of the art Li – S batteries : Case study - I

● Lecture 50 : State of the art Li – S batteries : Case study - II

● Lecture Material

○ Quiz: Week 10: Assignment 10

● Feedback form for Week 10

Week 11

Week 12

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Assignment Detailed Solution

Live Interactive session

Week 10: Assignment 10

The due date for submitting this assignment has passed.

Due on 2021-10-06, 23:59 IST.

As per our records you have not submitted this assignment.

1) The theoretical specific capacity of Sulphur is:

2 points

- (a) 1170 mAh/g
(b) 235 mAh/g
(c) 1675 mAh/g

- a
 b
 c

No, the answer is incorrect.
Score: 0

Accepted Answers:
c

2) Among the following discharge products of Li-S battery, which one is/are soluble in the organic electrolyte?

2 points

- (a) Li_2S_4
(b) Li_2S
(c) Li_2S_8

- a
 b
 c

No, the answer is incorrect.
Score: 0

Accepted Answers:
a
c

3) In Li-S battery, the well-known shuttle effect is originated due to the:

2 points

- (a) Dissolution of long chain polysulphides in the electrolyte
(b) Instability of the electrolyte
(c) Delamination of the electrode

- a
 b
 c

No, the answer is incorrect.
Score: 0

Accepted Answers:
a

4) Why LiNO_3 additive is used in the electrolyte of Li-S cell?

2 points

- (a) To improve the ionic conductivity of electrolyte
(b) To improve the electrolyte stability
(c) To suppress the shuttle effect

- a
 b
 c

No, the answer is incorrect.
Score: 0

Accepted Answers:
c

5) Among the following salts, which one is commonly used in electrolyte for Li-S cell?

2 points

- (a) LITFSI
(b) LiPF_6
(c) LiClO_4

- a
 b
 c

No, the answer is incorrect.
Score: 0

Accepted Answers:
a

6) Lack of voltage rise during charging in a Li-S battery is an indication of

2 points

- (a) Poor electronic conductivity of the positive electrode
(b) Li dendrite formation
(c) Redox shuttle effect

- a
 b
 c

No, the answer is incorrect.
Score: 0

Accepted Answers:
c

7) Which solvent is commonly used to prepare electrolyte for Li-S battery?

2 points

- (a) PC
(b) EC: DMC (3:7 wt%)
(c) DOL:DME (1:1 V/V)

- a
 b
 c

No, the answer is incorrect.
Score: 0

Accepted Answers:
c

8) TiO_2 is added in the cathode composition of Li-S battery

2 points

- (a) To improve the electronic conductivity of the cathode composite
(b) To buffer the volumetric stresses generated during cycling
(c) To absorb the polysulphides and reduce their dissolution in electrolyte

- a
 b
 c

No, the answer is incorrect.
Score: 0

Accepted Answers:
c

9) Which approach would result a homogeneous Sulphur distribution in a mesoporous carbonaceous host?

2 points

- (a) Melt impregnation of Sulphur
(b) Ball milling the Sulphur and carbonaceous host together
(c) Wet-chemical synthesis of Sulphur in presence of the carbonaceous host

- a
 b
 c

No, the answer is incorrect.
Score: 0

Accepted Answers:
a

10) Among the following binders which can reduce the polysulphide dissolution in Li-S battery?

2 points

- (a) Polyvinylidene difluoride
(b) Poly acrylic acid
(c) Polyacrylonitrile

- a
 b
 c

No, the answer is incorrect.
Score: 0

Accepted Answers:
b
c