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Article

A Study on the Removal Characteristics and Mechanism of Phosphorus from Simulated Wastewater Using a Novel Modified Red-Mud-Based Adsorption Material

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Abstract: In this work, a common third-generation environmentally friendly quaternary ammonium salt disinfectant, dimethyl diacetoxyl ammonium chloride (DDAC), was used as the modifier to achieve one-step rapid preparation of the modified red-mud-based adsorption material under the condition of microwave assistance, and applied it to the adsorption phosphorus in solutions. After the process of this modification, the structure of the red mud (RM) was not changed, and the DDAC modification could provide more adsorption active sites. The adsorption experiments indicated that the novel modified red mud (NMRM) exhibited a good adsorption performance for phosphorus. The adsorption capability of NMRM for phosphorus was significantly enhanced, and was about eight times higher than that of the initial RM. The kinetics model of the pseudo-second-order, which implied that phosphorus was chemically adsorbed on the surface of the NMRM, could accurately represent the adsorption procedure of NMRM. The adsorption equilibrium of NMRM could be better depicted using the isotherm model of Freundlich. It was speculated that the ion exchange might be responsible for the adsorption mechanism of NMRM for phosphorus. Thus, the NMRM is a potential material for the treatment of phosphorus-containing wastewater due to its outstanding adsorption capability.

Keywords: red mud; modification; ion exchange; phosphorus; adsorption



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Fortinet FCP_FWF_AD-7.4 Exam Syllabus Topics:

Topic	Details
Topic 1	<ul style="list-style-type: none">Wireless fundamentals and FortiAP management: This section of the exam measures skills of network engineers and covers the foundational understanding of wireless technologies and standards. It includes knowledge of deploying FortiAP devices using the integrated FortiOS wireless controller and configuring them using custom access point profiles.

Topic 2	<ul style="list-style-type: none"> Wireless network security and access: This section of the exam measures skills of security administrators and covers the design and deployment of secure wireless networks. It includes configuring wireless access controls, implementing VLANs, and using network access control (NAC) to segment and protect the wireless environment.
Topic 3	<ul style="list-style-type: none"> Wireless diagnostics and analytics: This section of the exam measures skills of security administrators and covers the tools and techniques used to diagnose and analyze wireless issues. It includes gathering information from clients and devices, troubleshooting common wireless problems, and reviewing logs and debug data to apply effective fixes.
Topic 4	<ul style="list-style-type: none"> Wireless monitoring and protection: This section of the exam measures skills of network engineers and covers monitoring and managing wireless infrastructure. It focuses on identifying wireless threats, detecting malicious activities, and ensuring access point performance and stability. It also involves implementing guest services and location-based presence features.

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Fortinet FCP - Secure Wireless LAN 7.4 Administrator Sample Questions (Q158-Q163):

NEW QUESTION # 158

Which statement is correct about security profiles on FortiAP devices?

Response:

- A. Only bridge mode SSIDs can apply the security profiles
- B. Disable DTLS on FortiAP
- C. Security profiles on FortiAP devices can use FortiGate subscription to inspect the traffic
- D. FortiGate performs inspection the wireless traffic

Answer: A

NEW QUESTION # 159

Which configurations are required when deploying FortiAP devices using FortiAP Cloud?

(Select all that apply)

Response:

- A. Manage AP settings centrally through the cloud platform
- B. Apply predictive modeling using FortiPlanner
- C. Set up FortiPresence analytics for monitoring
- D. Configure FortiAP profiles in FortiAP Cloud

Answer: A,D

NEW QUESTION # 160

Which action does a wireless client or the access point take when the wireless client moves away from an associated AP until the signal drops?

- A. The wireless client disconnects and connects to a different, available AP
- B. The associated AP sends an alert message to the wireless client about the signal drop
- C. The wireless client increases its signal power to continue connecting to the same AP
- D. The associated AP marks the wireless client as disconnected and must not reconnect

Answer: A

NEW QUESTION # 161

VLAN load-balancing features mainly aim to:

Response:

- A. Set up guest accounts for visitors.
- B. Configure advanced bridge modes.
- C. Evenly distribute network traffic across VLANs.
- D. Strengthen wireless signals.

Answer: C

NEW QUESTION # 162

What are the benefits of using SSID hiding in a wireless network?

(Select all that apply)

Response:

- A. Preventing casual scanning of the network
- B. Allowing automatic connection for authorized devices
- C. Reducing the visibility of the network to unauthorized users
- D. Enhancing wireless signal strength

Answer: A,C

NEW QUESTION # 163

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