APPLICATION OF SYNTHESIS OF CARBON DOTS (C-Dots) FROM RICE STRAW WASTE (*Oryza sativa*) AS ABSORBENT METAL CADMIUM (Cd) IN GELIS KUDUS RIVER WATERS

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ABSTRACT

Synthesis of Carbon Dots (C-Dots) from rice straw waste has been carried out by the microwave method. This study aimed to determine the characteristics of C-Dots from rice straw and its application as Cadmium (Cd) metal absorbent in the waters of the Gelis river, Kudus. The research was started with the characterization of C-Dots through UV-Vis and Photoluminescence (PL) tests. After that, the dissolved Cadmium content test was carried out to determine the effectiveness of the C-Dot of rice straw in absorbing Cadmium (Cd) metal. The results showed that Carbon Dots (C-Dots) from rice straw were successfully synthesized by microwave method. UV-Vis test showed that the C-Dots had absorbance in the wavelength range of 283-332 nm. The light emission peak is at a wavelength of 510.39 nm, with a greenish glow. The effectiveness of rice straw C-Dots as Cadmium (Cd) absorbent is not yet known due to several factors, including (1) the mixing process is not yet homogeneous, (2) testing of Cadmium levels is only carried out once per sample, and (3) sampling and testing is not in the same time. The application of the synthesis of Carbon Dots (C-Dots) from rice straw as absorbent can be continued with improvements in the process of making samples of Cadmium (Cd) solution.

Keywords: Carbon Dots, Rice Straw, Absorbent, Cadmium

APLIKASI SINTESIS CARBON DOTS (C-dots) DARI LIMBAH JERAMI PADI (*Oryza sativa*) SEBAGAI ABSORBEN LOGAM KADMIUM (Cd) DI PERAIRAN SUNGAI GELIS KUDUS

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ABSTRAK

Sintesis *Carbon Dots* (C-Dots) dari limbah jerami padi telah dilakukan dengan metode *microwave*. Penelitian ini bertujuan untuk mengetahui karakteristik C-Dots dari jerami padi dan aplikasinya sebagai absorben logam Kadmium (Cd) di perairan sungai Gelis, Kudus. Penelitian dimulai dengan karakterisasi C-Dots melalui uji UV-Vis dan *Photoluminescence* (PL). Setelah itu, dilakukan uji kandungan Cadmium terlarut untuk mengetahui efektivitas C-Dot jerami padi dalam menyerap logam Kadmium (Cd). Hasil penelitian menunjukkan bahwa *Carbon Dots* (C-Dots) dari jerami padi telah berhasil disintesis dengan metode microwave. Uji UV-Vis menunjukkan C-Dots memiliki absorbansi pada rentang panjang gelombang 283-332 nm. Puncak emisi cahaya berada pada panjang gelombang 510,39 nm, dengan pendaran berwarna kehijauan. Efektivitas C-Dots jerami padi sebagai absorben Kadmium (Cd) belum diketahui karena beberapa faktor, diantaranya (1) proses pencampuran yang belum homogen, (2) pengujian kadar Kadmium hanya dilakukan 1 kali per sampel, dan (3) pengambilan dan pengujian sampel tidak pada waktu yang bersamaan. Aplikasi sintesis Carbon Dots (C-Dots) dari jerami padi sebagai absorben dapat dilanjutkan dengan perbaikan dalam proses pembuatan sampel larutan Cadmium (Cd).

Kata Kunci: Carbon Dots, Jerami Padi, Absorben, Kadmium