

Supporting Information

Sodium Alginate–Aldehyde Cellulose Nanocrystal Composite Hydrogel for Doxycycline and Other Tetracycline Removal

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S1. Determination of the aldehyde content in DCNC by titration

An appropriate amount of DCNC suspension (equivalent to 0.1 g in dry weight) was added to 40 mL of 0.25 M hydroxylamine hydrochloride solution (pH = 4.5), where the mixture was stirred at room temperature for 24 h. Subsequently, the released HCl from the Schiff's base reaction was titrated with 0.05 M NaOH until the pH value of the solution returned to 4.5. Titration was also conducted on the same amount of bamboo pulp (pristine cellulose) in suspension as the reference experiment (blank). The aldehyde content in the mass unit of DCNC was calculated by Equation S1 as follows:

$$\text{Aldehyde content} = C_{\text{NaOH}} (V_{\text{test}} - V_{\text{blank}}) / m \quad (\text{S1})$$

where C_{NaOH} is the concentration of the titrating solution (0.05 M); V_{test} and V_{blank} (mL) are the volumes of the NaOH solution consumed in adsorbents or blank sample during titration, respectively, and m (g) is the dry weight of DCNC.