

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.