

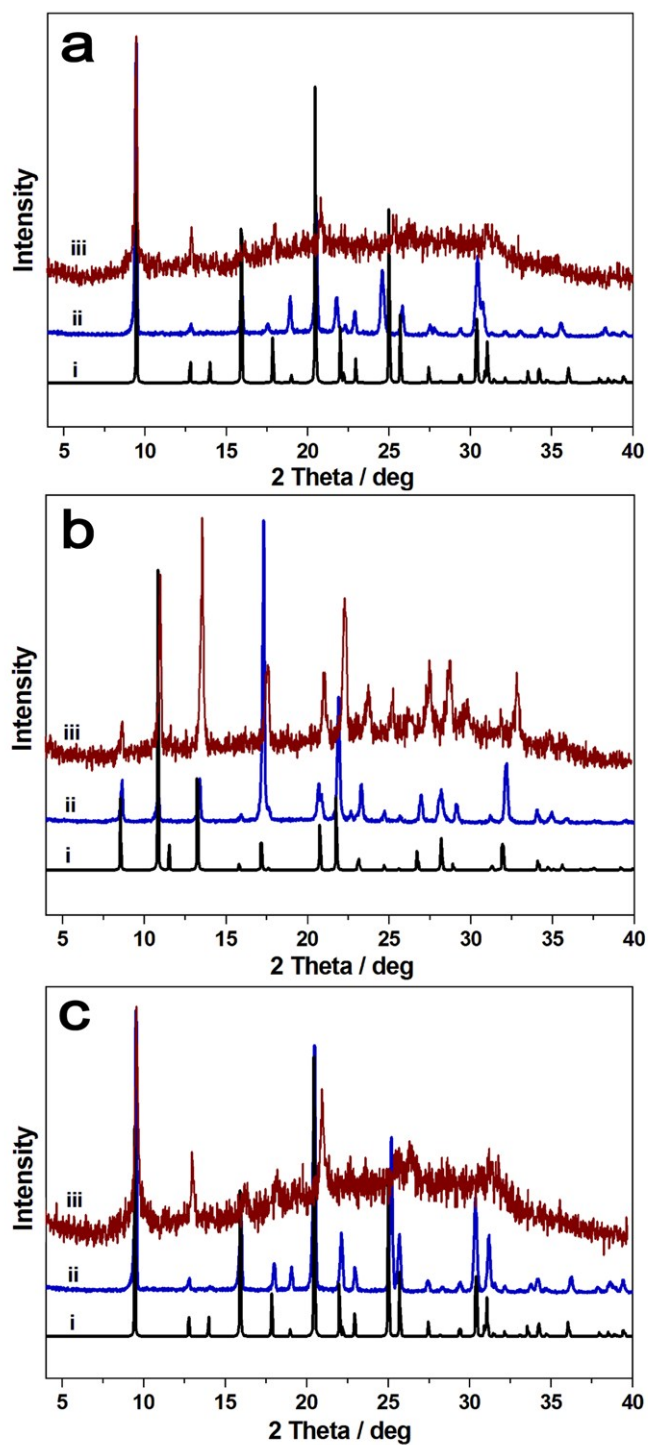
## **Electronic Supplementary Information for:**

### **CNDs@Zeolite: New Room Temperature Phosphorescence Materials Derived by Pyrolysis of Organo-Templated Zeolites**

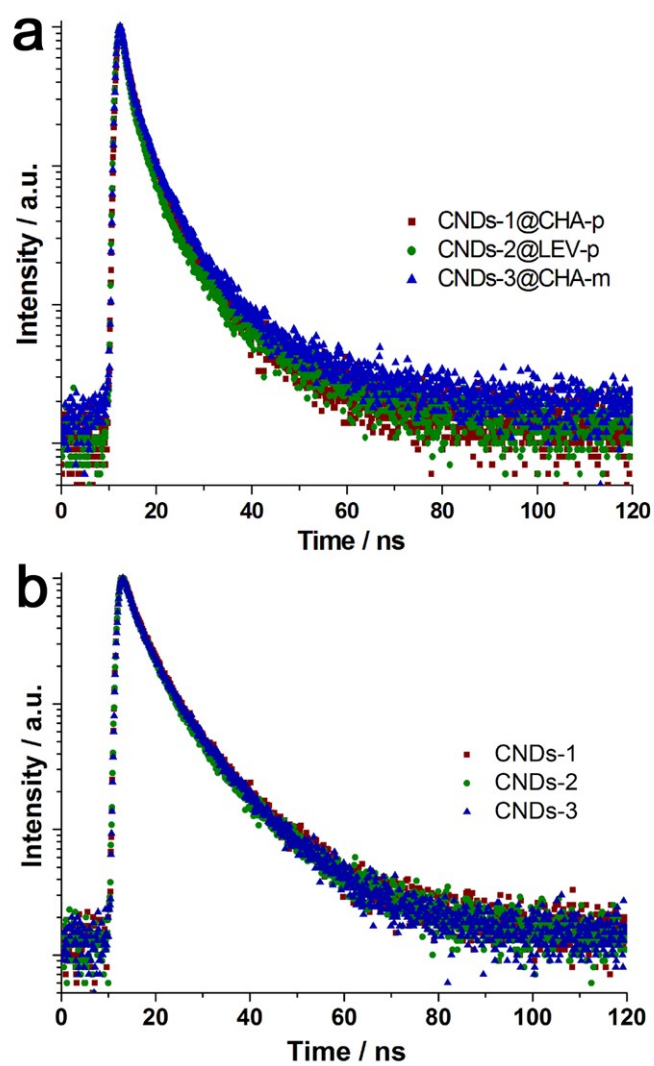
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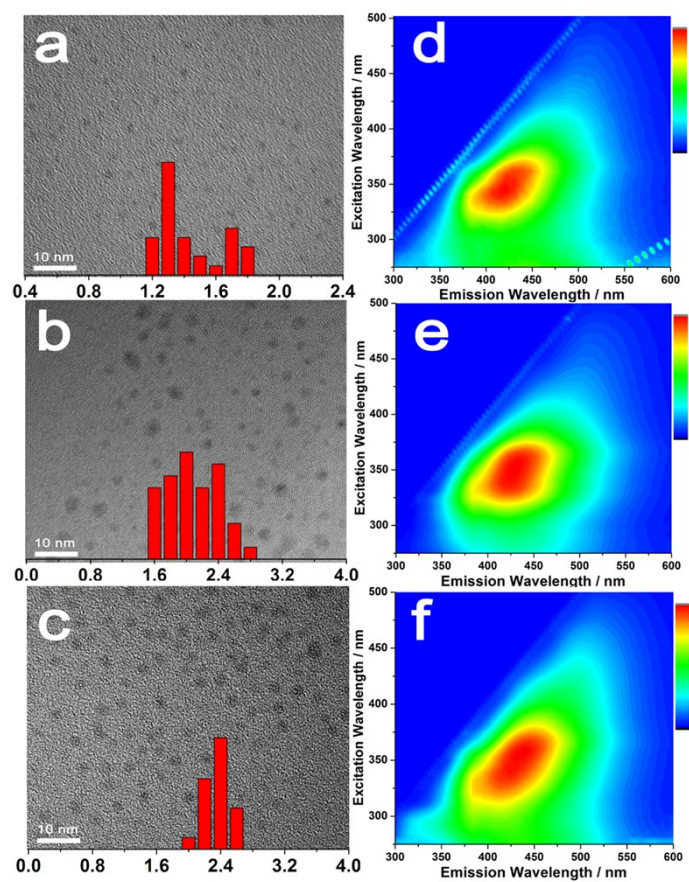
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**Fig. S1.** Powder X-ray diffraction patterns of (a) *N*-methylpiperidine templated CHA zeolite (b) *N*-methylpiperidine templated LEV zeolite and (c) *N*-methylmorpholine templated CHA zeolite. (i) simulated and (ii) as-synthesized zeolites, (iii) CNDs@zeolite composites.



**Fig. S2.** Time-resolved fluorescence decay curves of (a) CNDs@zeolite composites and (b) isolated CNDs detected at 450 nm with excitation at 370 nm.



**Fig. S3.** TEM images (a-c) and fluorescence EEMs (d-f) of CNDs-1, CNDs-2, CNDs-3, respectively. Emission intensity rises from blue to green and to red. Insets in a-c show the size distribution.

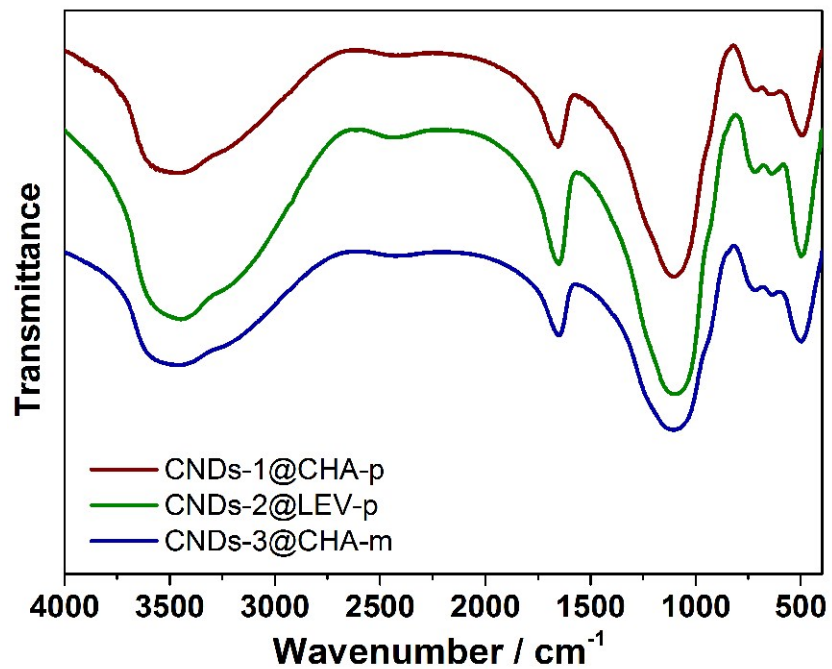
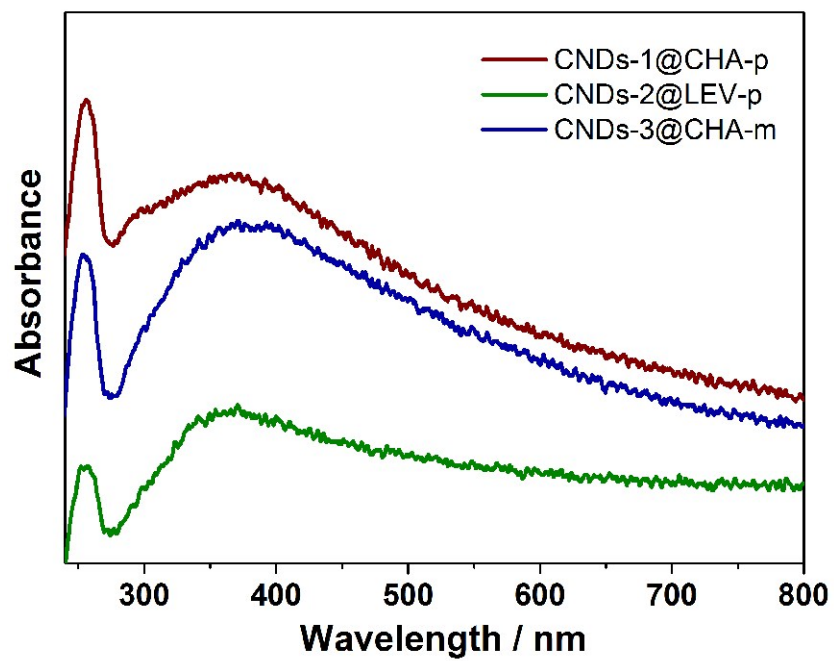


Fig. S4. FTIR spectra of CNDs@zeolite composites.



**Fig. S5.** UV-vis absorbance spectra of CNDs@zeolite composites.

**Table S1.** Fitting parameters of time-resolved fluorescence decay traces of CNDs@zeolite composites and isolated CNDs

	$\tau_1$ / ns	$B_1$ / %	$\tau_2$ / ns	$B_2$ / %	$\tau_3$ / ns	$B_3$ / %	$\tau_{avg}$ / ns	CHISQ
CNDs-1@CHA-p	1.6	60	4.6	37	15.2	3	3.0	1.2
CNDs-1	2.5	42	5.5	48	13.1	10	5.0	1.0
CNDs-2@LEV-p	1.3	67	4.3	31	16.1	2	2.6	1.2
CNDs-2	2.0	34	5.0	58	13.9	8	4.7	1.0
CNDs-3@CHA-m	1.3	55	4.5	42	14.9	3	3.1	1.1
CNDs-3	2.4	44	5.5	44	12.1	12	4.9	1.0

$\lambda_{ex}$  = 370 nm and  $\lambda_{em}$  = 450 nm

**Table S2.** Percentage (%) of C-C/C=C, C-N/C-O and C=N/C=O/O-C=O in CNDs@zeolite composites as determined by XPS measurements.

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	CNDs-1@CHA-p	CNDs-2@LEV-p	CNDs-3@CHA-m
C-C/C=C	78.0	83.4	83.6
C-N/C-O	18.7	14.2	12.2
C=N/C=O/O-C=O	3.3	2.4	4.2

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**Table S3.** Fitting parameters of time-resolved phosphorescence decay traces of CNDs@zeolite composites

	$\tau_1$ / ms	$B_1$ / %	$\tau_2$ / ms	$B_2$ / %	$\tau_3$ / ms	$B_3$ / %	$\tau_{\text{avg}}$ / ms	CHISQ
CNDs-1@CHA-p	5.8	73	56	20	405	7	277	1.1
CNDs-2@LEV-p	5.0	76	50	18	400	6	273	1.1
CNDs-3@CHA-m	3.1	76	38	18	416	6	312	1.2

$\lambda_{\text{ex}} = 365$  nm and  $\lambda_{\text{em}} = 510$  nm