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## Synthesis of Organophilic Carbon Nanodots with Multi-Band Emission from Tomato Leaves

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Researchers from Shanghai Normal University prepared organophilic carbon nanodots (CNDs) using natural organic molecules in plant leaves by a one-pot green synthesis. The multi-emissive carbon dots were used as an efficient fluorescent sensor in ethanol, which have potential applications in sensing fields or energy devices.

Organophilic carbon nanodots (CNDs) were synthesized in acetone from organic extract of natural plant leaves. The CNDs showed multi-band emission, and could be well dispersed in acetone and ethanol. Taking advantage of their structural and optical properties, the CNDs were used as a ratiometric and colorimetric sensor for curcumin detection in ethanol.

Multi-band emission is one of the intriguing properties of the CNDs. In this work, the biomass-derived CNDs showed two photoluminescence (PL) bands. The PL at 520 nm was excitation-independent, while the PL in the blue region could be tuned from 420 nm to 480 nm through changing of the excitation wavelength. Taking advantage of their optical properties, the CNDs were used as a ratiometric and colorimetric sensor for curcumin detection in ethanol.

The blue PL of the CNDs at 420 nm was quenched by curcumin through inner filter effect. Meanwhile, the green PL at 495 and 535 nm were enhanced with additional fluorescence of curcumin. The fluorescence color of the mixed solution changed from blue to yellow, and the detection limit reached 36.7 nM. The sensitive and visual detection of the CNDs probe toward curcumin showed their high potential in practical applications.

While most CNDs reported so far were prepared in water, it is of high demand to develop CNDs that can be well dispersed in organic solution. Natural plant leaves contain plenty of organic molecules, their aliphatic groups may be reserved during the formation of the CNDs, and act as surface groups to realize hydrophobicity of the obtained CNDs. Here, the CNDs were directly synthesized in acetone containing organic extract of plant leaves, and could be well-dispersed in acetone and ethanol.

This work provided a possible way for changing surface groups of the CNDs by selecting the raw materials. For more insight into the research described, readers are invited to access the paper on [NANO](#).

Read the [original article](#) on World Scientific Publishing.