Supplementary Material of the Manuscript submitted to Nanomaterials:

Nanofibrous Conductive Sensor for Limonene: One-Step Synthesis via Electrospinning and Molecular Imprinting

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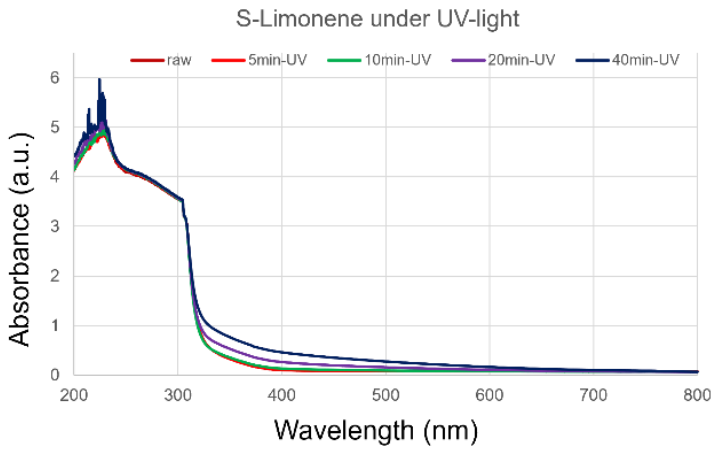
Materials and Methods: UV-Vis Spectrometry

The UV-2600 Shimadzu spectrophotometer (Shimadzu Italia, MI, Italy) was configured to assess the absorbance characteristics of pure limonene within a wavelength range of 200 to 800 nm. Initially sealed in opaque containers to prevent light exposure, the limonene samples were then subjected to UV-light irradiation, the same used in photocrosslinking processes (Italquarz, Italy). Quartz cuvettes containing the limonene were positioned in the path of the UV-light source and exposed for varying durations (5, 10, 20, and 40 minutes). After each exposure interval, the cuvettes were promptly removed from the UV-light source and placed into the spectrophotometer's sample compartment. Utilizing UV-Probe-2.50 Software, absorbance measurements were recorded and plotted against the corresponding exposure times, facilitating visualization of changes in limonene's absorbance profile due to UV-light exposure.

Results and Discussion

In general, limonene absorbs strongly in the UV region with peaks typically observed around 200-300 nm. These peaks are attributed to the presence of conjugated double bonds in the limonene molecule. Additionally, limonene may also exhibit absorption bands in the visible region (400-700 nm), although these are usually less prominent compared to the UV peaks.



Fugure S1. UV-Vis spectra of pure S(-)-limonene before and after UV-light irradiation for varying exposure durations: 5, 10, 20, and 40 minutes.

To confirm a change of the molecule following UV-irradiation, UV-Vis spectra in Figure 13 show a shift in the absorbance of S-limonene within the 300-500 nm range of the irradiated sample for more than 10 min. It could suggest ongoing oxidation processes or photolysis [**1,2**]. The specific changes in the UV-Vis spectrum would depend on the nature of the oxidized products formed during the reaction.

Indeed, the analysis aimed to discern any alterations in the spectral properties of limonene induced by UV-light irradiation, including shifts in absorbance intensity or the emergence of new spectral features.

Therefore, it is reasonable to suppose that limonene remained largely stable during the initial 10 minutes of irradiation.

This leads us to presume that there were no alterations to the template within the 5 minutes of photo-crosslinking employed for the development of the MINFs.

References

1] **Bateman, Adam & Nizkorodov, Sergey & Laskin, Julia & Laskin, Alexander. (2011). Photolytic processing of secondary organic aerosols dissolved in cloud droplets. Physical chemistry chemical physics: PCCP 13. 12199-212. 10.1039/c1cp20526a**

2] Maggie L. Walser, Jiho Park, Anthony L. Gomez, Ashley R. Russell, and Sergey A. Nizkorodov. Photochemical Aging of Secondary Organic Aerosol Particles Generated from the Oxidation of d-Limonene. J. Phys. Chem. A 2007, 111, 10, 1907–1913