

Supplementary Information

Nickel oxide nanoparticles modified with dimethylglyoxime grafted on cellulose surface as an efficient adsorbent for thin film microextraction of tramadol in biological fluids followed by its determination using HPLC

Zahra Ayazi^{a,b}, Sahar Hobbivand^a, Samira Pashayi Sarnaghi^a*

^aDepartment of Chemistry, Faculty of Sciences, Azarbaijan Shahid Madani University, P.O. Box 53714-161 Tabriz, Iran

^bMolecular Science and Engineering Research Group (MSERG), Azarbaijan Shahid Madani University, P.O. Box 53714-161 Tabriz, Iran.

^{a,b}Corresponding author Tel: +98 41 34327500; Fax: +98 41 34327541

E-mail address: ayazi@azaruniv.ac.ir

<http://orcid.org/0000-0001-6867-9505>

Fig. S1.

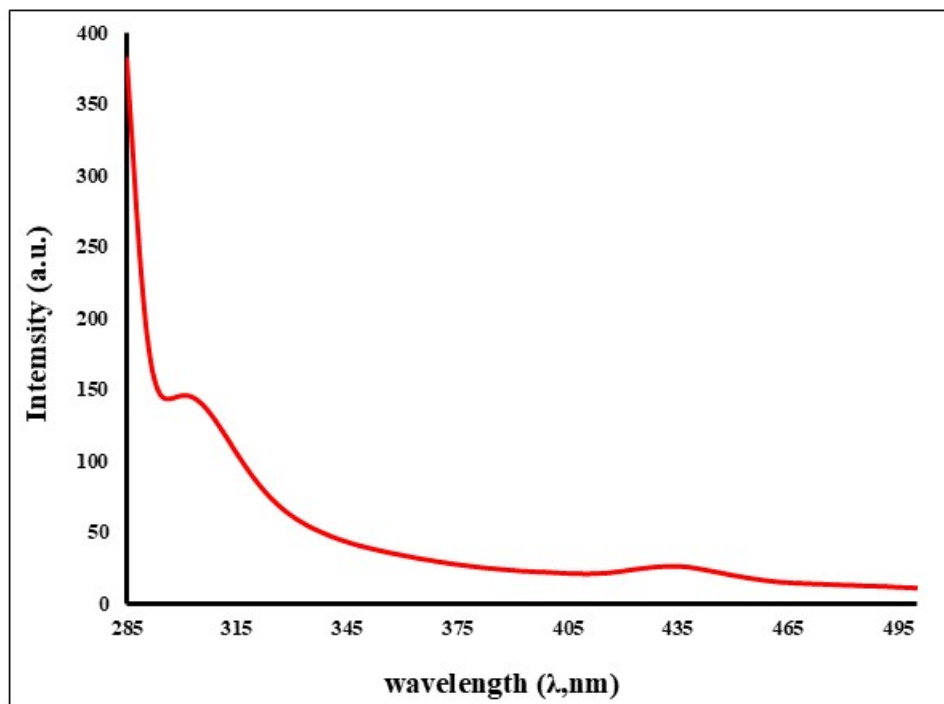


Fig. S1. Fluorescence spectrum of TRA using emission scan mode by employing the excitation wavelengths of 272 nm at medium intensity.

Fig. S2.

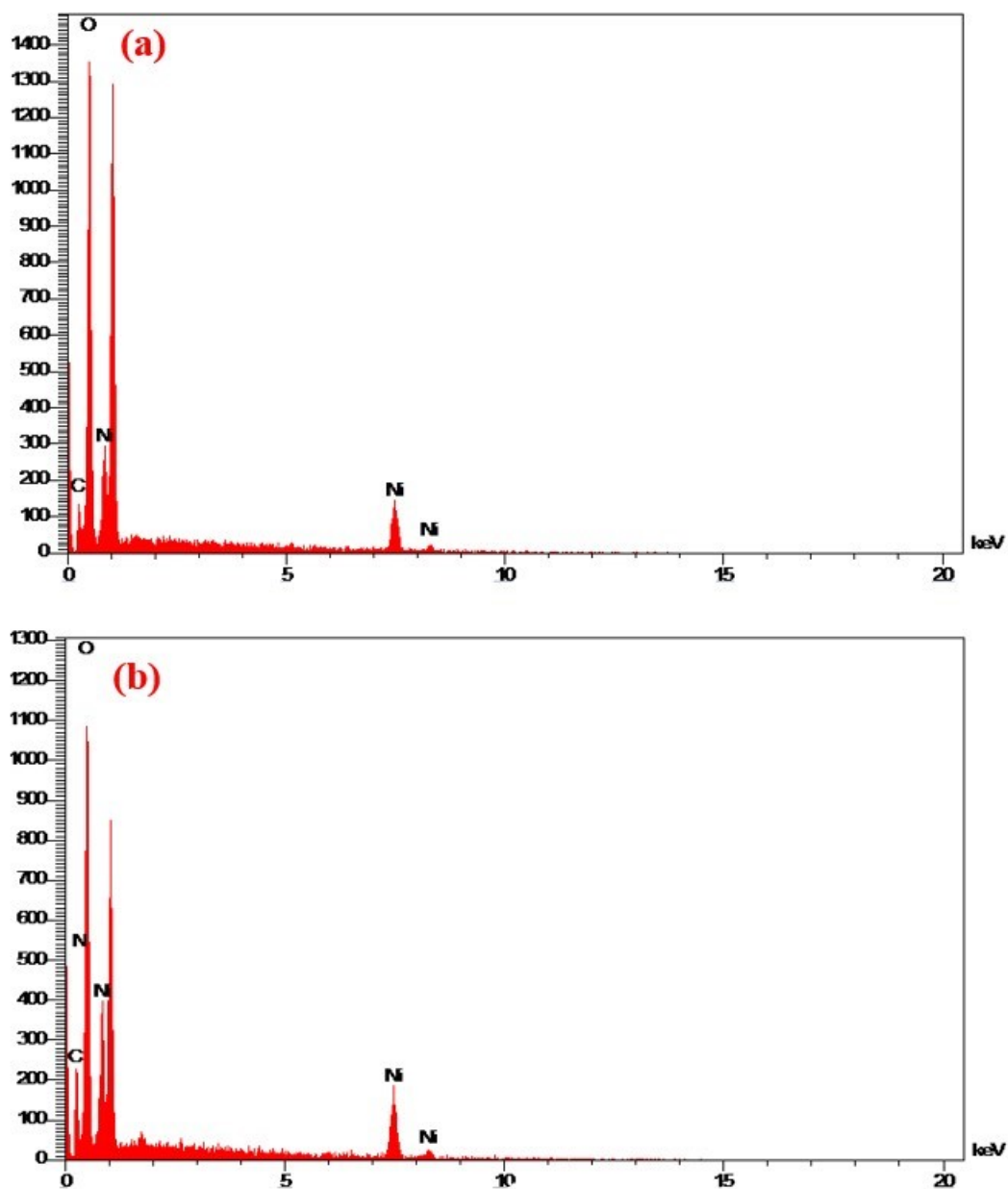


Fig. S2. The EDS spectra of (a) NiO-Cell thin film and (b) Ni(DMG)₂-NiO-Cell based thin film.

Fig. S3.

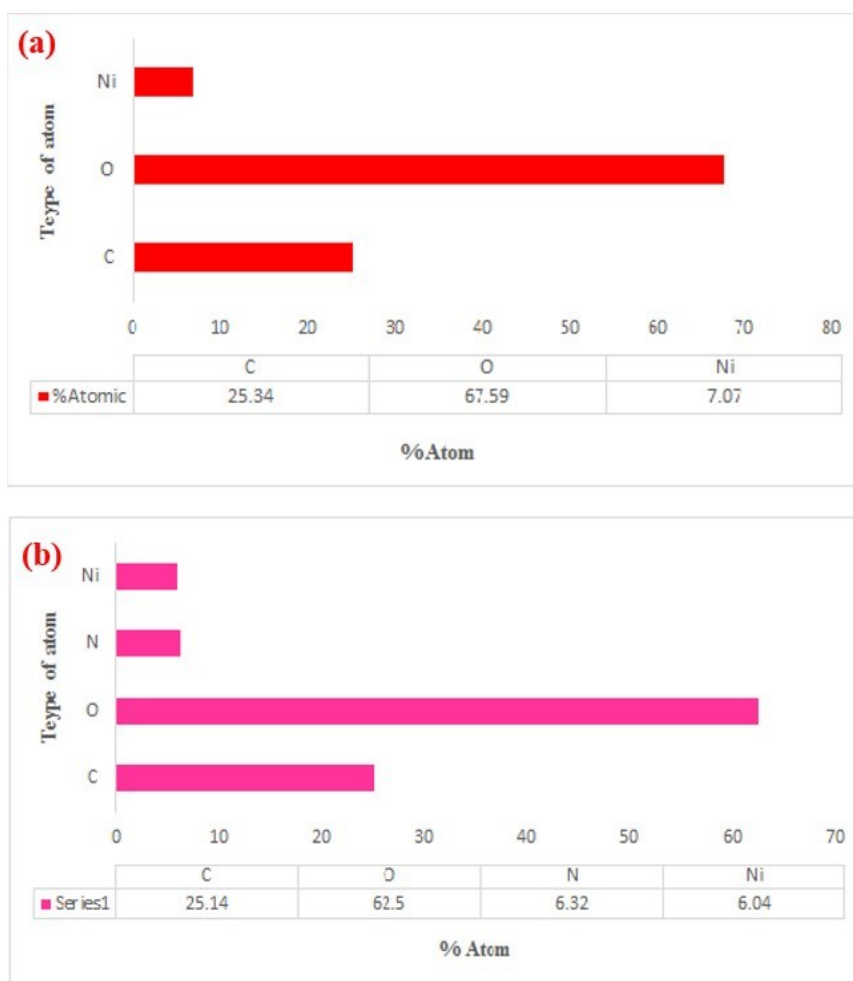


Fig. S3. The results of EDS analysis displaying the percentage of each atom present in the structure (a) NiO-Cell thin film and (b) Ni(DMG)₂-NiO-Cell based thin film.

Table S1. The obtained RSD data for inter-day, intra-day, and inter- thin film repeatability and accuracy in concentration level of 1000 ng mL⁻¹.

No. sample	Inter-day	Intra-day	Inter-thin film
	Fluorescence intensity	Fluorescence intensity	Fluorescence intensity
1	340.845	368.701	285.333
2	290.842	465.992	339.125
3	318.82	396.424	335.254
4	298.253	431.004	321.341
5	294.2	425.096	345.632
6	280.492	373.405	341.228
RSD (%)	6.6	8.3	6.2

Table S2. The obtained RSD data for inter-day, intra-day, and inter- thin film repeatability and accuracy in concentration level of 100 ng mL⁻¹.

No. experiment	Inter-day	Intra-day	Inter-thin film
	Fluorescence intensity	Fluorescence intensity	Fluorescence intensity
1	338.00	368.70	286.00
2	291.84	451.02	341.63
3	294.2	395.42	339.125
4	318.82	425.09	336.25
5	297.26	428.00	340.23
6	280.49	374.00	328
RSD (%)	6.3	7.4	5.9