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Title: Determination of trace water contents of organic solvents by gas chromatography-mass spectrometry-selected ion monitoring

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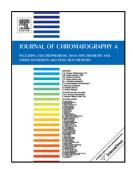
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ACCEPTED MANUSCRIPT

1	Determination of trace water contents of organic solvents by gas chromatography-mass
2	spectrometry-selected ion monitoring
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6	
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8	
9	<u>Highlights</u>
10	• This method has a low detection limit and an excellent linear correlation.
l 1	• It is not affected by the chemical properties of the organic solvents.
12	 This method is very environmentally friendly and saves reagents.
13	
13	Abstract: This paper describes the development of a novel gas chromatography-mass spectrometry-selected
15	ion monitoring (GC/MS-SIM) method for the determination of trace water contents of organic solvents, using the
16	characteristic m/z 18, m/z 17, and m/z 16 ions of H ₂ O as the qualitative ion and the m/z 18 ion as the quantifier ion.
17	The accuracy and precision of this method were validated. An excellent linear correlation was obtained for trace
18	water contents between 0 and 0.5217 wt%, with a correlation coefficient (R^2) of 0.9999 , in addition to spike
19	recoveries of $82.6-112.6\%$, and relative standard deviations (n = 6) of $0.4-7.2\%$. The limit of detection (S/N = 3)
20	and limit of quantitation ($S/N = 10$) for the trace water contents of organic solvents were 0.0005% wt% and
21	0.0016% wt%, respectively. The analytical results confirmed that this method was useful for determining the trace
22	water contents of organic solvents, because it has a low detection limit and wide linear range. It requires only small
23	amounts of the samples and enables sample batch analysis. It is very environmentally friendly and saves reagents.
24	
25	Keywords : organic solvent; trace water determination; gas chromatography-mass spectrometry (GC-MS); selected
26	ion monitoring (SIM)

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