

# 4-Amino-benzo[f]isoindole-1,3-dione Derivatives as Turn-on Fluorescent Indicators for Water Determination in Acetonitrile

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*4-Amino-9-(2,5-dioxo-pyrrolidin-1-phenyl-3-yl)-1-phenyl-benzo[f]isoindole-1,3-dione (1) and 4-amino-9-(2,5-dioxo-1-(4-methylphenyl)-pyrrolidin-3-yl)-1-(4-methylphenyl)-benzo[f]isoindole-1,3-dione (2) were studied as fluorescent indicators for water determination in acetonitrile. The intensity of fluorescence of these compounds in acetonitrile solutions increases in presence of water along with red shift of the emission peak. Intensity-based and wavelength-based procedures of water determination in acetonitrile are suggested with detection limit of 0.2% (v/v) H<sub>2</sub>O in both cases. The linear response covers a concentration range of 0.2–20% (v/v). The relative standard deviation at 1% (v/v) water content is 0.20. The interferences of acetic acid, ammonia and metal ions have been studied. Ammonia and acetic acid don't interfere with the determination of water by wavelength-based fluorescence technique. In intensity-based mode the determination of water is possible at concentration of these impurities up to 0.25 and 0.02 mol·L<sup>-1</sup>, respectively. Cu(II) ions have almost no effect on fluorescence of indicators up to 1·10<sup>-5</sup> mol·L<sup>-1</sup>; Zn(II) ions enhance fluorescence of 1 at concentration ≥ 5·10<sup>-6</sup> mol·L<sup>-1</sup>. The 4-amino-benzo[f]isoindole-1,3-dione-based fluorescent indicators are pH-insensitive.*

**Keywords:** 4-amino-benzo[f]isoindole-1,3-dione derivatives, turn-on fluorescence detection, water content, acetonitrile, solvatochromic shift

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