TIME RESOLVED LASER-INDUCED FLUORESCENCE OF ELECTROSPRAYED IONS CONFINED IN A LINEAR QUADRUPOLE TRAP

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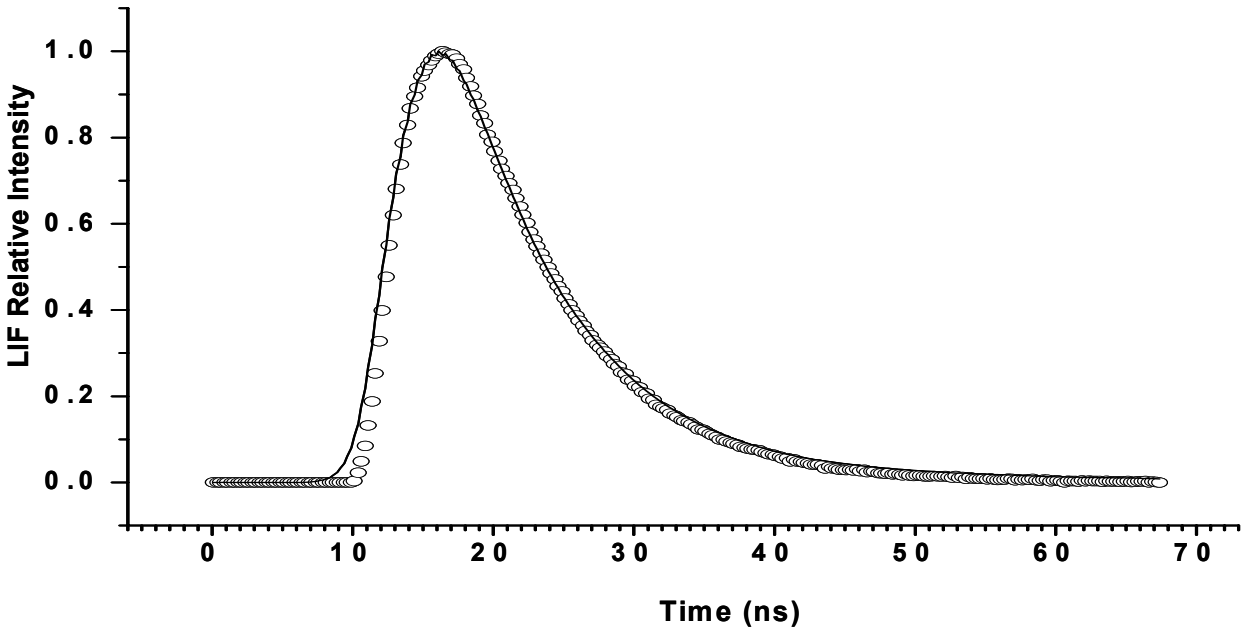
Introduction

We have designed and constructed a linear quadrupole ion trap for the measurement of laser-induced fluorescence (LIF) of mass selected gas-phase ions produced by electrospray ionization. The instrument consists of a simple electrospray source, radiofrequency octopole guide, a dc quadrupole bender, a quadrupole mass filter, the linear quadrupole trap (which is equipped with optics for LIF collection and a channeltron ion detector), and several multi-element focusing lenses. With this instrument, the LIF decay lifetime of gas-phase Rhodamine 640 radical cations is determined for the first time.[1]

Results and Discussion

The Figure shows a background-corrected time-domain LIF signal from Rhodamine 640 (○). The numerical fit (solid line) yields a fluorescence decay lifetime of 6 ns. Note the high signal-to-noise ratio, which enables determination of a fluorescence decay lifetime that approaches the excitation laser pulse width.



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References

[1] Friedrich, J., *et al.*, Rev. Sci. Instrum., **75 (11)**, 4511-4515 (2004).