

Ultrafast Dynamics of the Antibiotic Rifampicin in Solution

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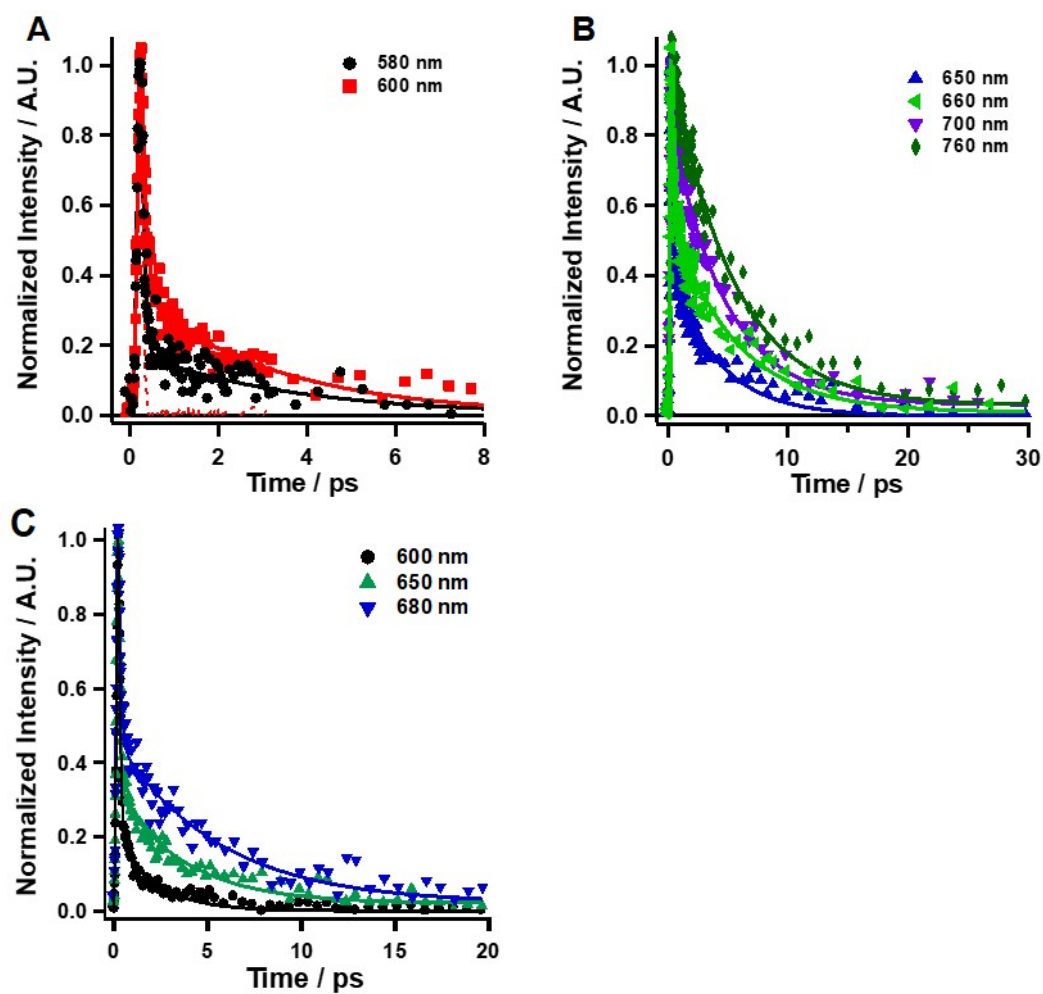


Figure S1. Fluorescence up-conversion decays of Rif in sodium phosphate buffer in (A) a 8 ps and (B) 30 ps range and (C) in DCM in 20 ps range. The pump wavelength was 420 nm. The representative probing wavelengths are shown in the inset. The solid line represents the results of multiexponential fits. The dashed signal is the IRF of the setup (220 fs).

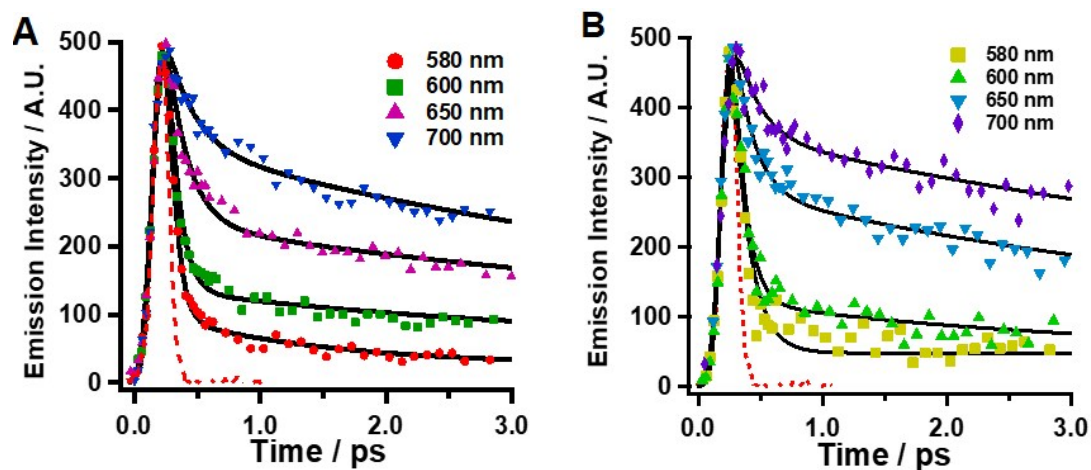


Figure S2. Fluorescence up-conversion decays of Rif in (A) methanol and (B) ethylene glycol in a 3 ps range. The pump wavelength was 420 nm. The representative probing wavelengths are shown in the inset. The solid line represents the results of multiexponential fits. The dashed signal is the IRF of the setup (220 fs).

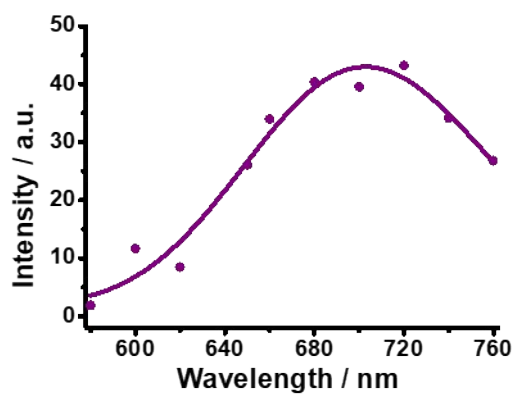


Figure S3. Constructed time-resolved emission spectra from the fs emission decays. The gated spectra are collected at 4ps delay of excited Rif in pH 7.1 phosphate buffer solution. The solid lines are from lognormal Gaussian fits of the emission bands.

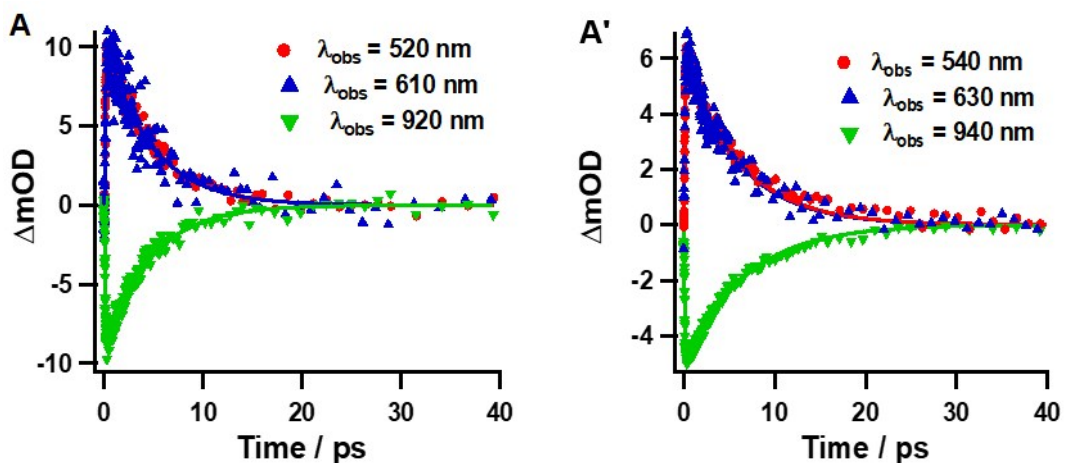


Figure S4A. Transient absorption decays of Rif (**A**) in phosphate buffer and (**A'**) in DCM in a 40 ps range. The transients were gated at indicated wavelengths. The pump wavelength was 460 nm. The solid line represents the multiexponential fit.

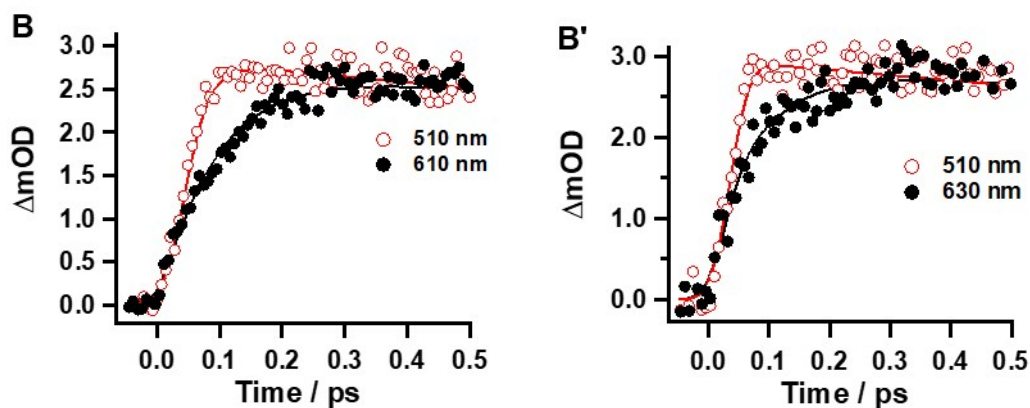


Figure S4B. Transient absorption decays of Rif (**B**) in phosphate buffer and (**B'**) in DCM in a 0.5 ps range. The transients were gated at indicated wavelengths. The pump wavelength was 460 nm. The solid line represents the multiexponential fit.

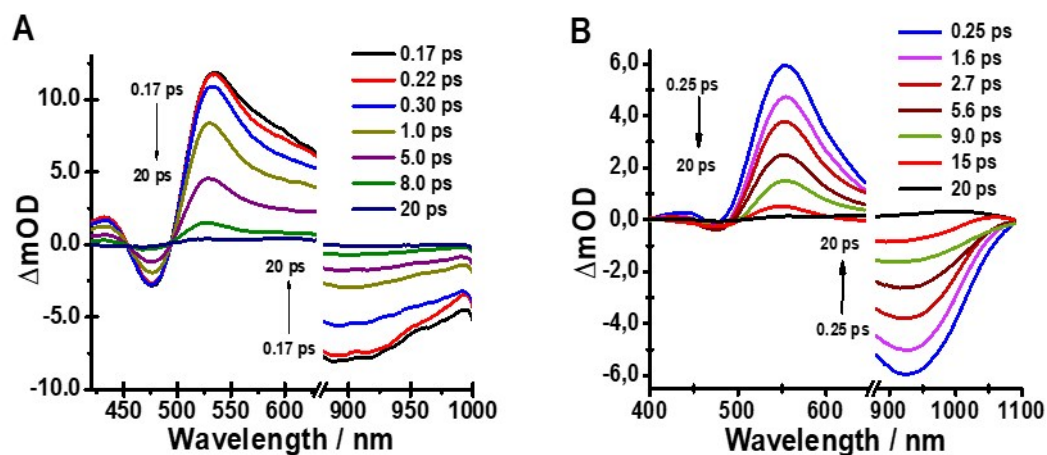


Figure S5. Transient absorption spectra time evolution of Rif in (A) pH 7.1 phosphate buffer and (B) DCM in 20 ps time delay window. The pump wavelength was 340 nm.

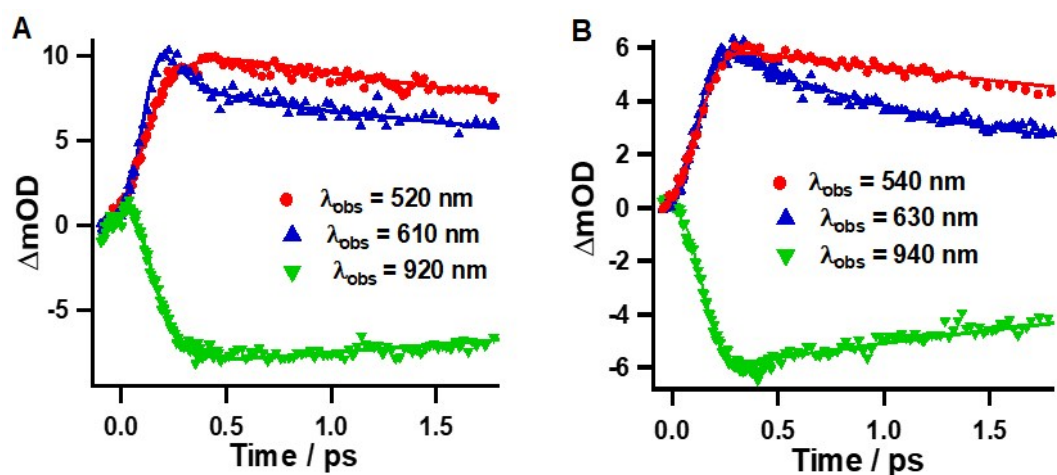


Figure S6. Transient absorption decays of Rif in (A) pH 7.1 phosphate buffer and (B) DCM in a 1.8 ps range. The pump wavelength was 340 nm, the transients were gated at the indicated wavelengths. The solid line represents the results of multiexponential fits.

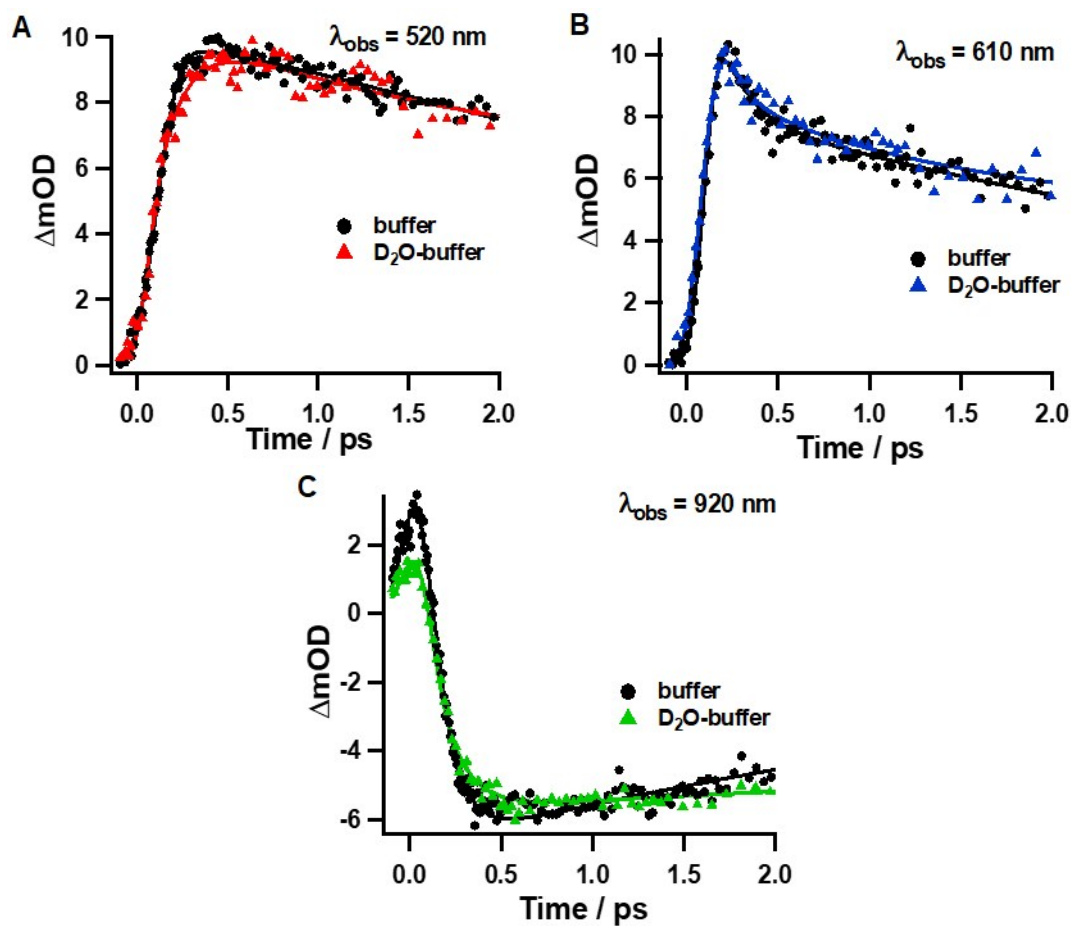


Figure S7. Transient absorption decays of Rif in phosphate buffer (black circle) and deuterated phosphate buffer (colored triangles) in a 2 ps range. The transients were gated (A) at 520 nm (red), (B) at 610 nm (blue) and (C) at 920 nm (green). The pump wavelength was 340 nm. The solid line represents the multiexponential fit.

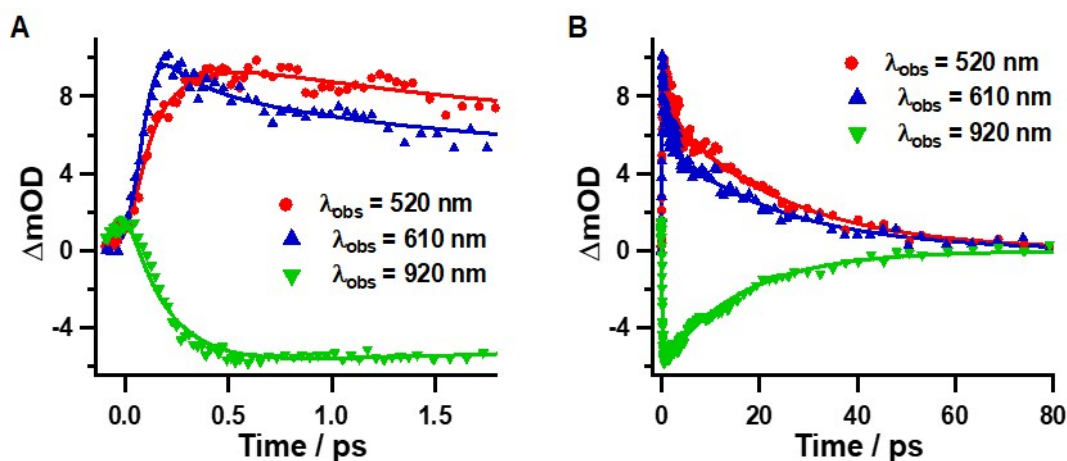


Figure S8. Transient absorption decays of Rif in deuterated phosphate buffer in (A) a 1.8 and (B) 80 ps range. The pump wavelength was 340 nm, the transients were gated at 520 nm (red) and 610 nm (blue). The solid line represents the multiexponential fit.

Solvents	λ_{obs}	τ_1 (fs \pm 40)	a_1 (%)	τ_2 (ps \pm 1)	a_2 (%)
Methanol	580	<100	95	1.4	5
	600	<100	90	3.2	10
	650	<100	75	5.4	25
	700	<100	47	5.5	53
Ethylene glycol	580	<100	100	-	-
	600	<100	92	2.7	8
	650	<100	66	4.9	34
	700	<100	43	6.8	57

Table S1. Values of Rif fluorescence time constants (τ_i) and their relative pre-exponential factors (a_i) obtained from single or multi-exponential fits. The transient signals were gated at the indicated wavelengths (λ_{obs}), upon excitation of Rif at 420 nm in the indicated solutions.

Solvent	λ_{obs} (nm)	τ_1 (fs \pm 60)	τ_2 (ps \pm 0.3)
Deuterated DCM	540	(-) 100	7.1
	630	100	5.6
	940	(-) 100	6.6

Table S2. Values of transient absorption lifetimes (τ_i) and their pre-exponential factors (a_i) obtained from multi-exponential fits of the transient signals probed at indicated observation wavelength (λ_{obs}) upon excitation at 340 nm in deuterated DCM. The negative sign indicates a rising component.

Acknowledgements

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