

Supplementary Information

**A versatile post-synthetic method on solid support for the synthesis of
RNA containing reduction-responsive modifications**

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- S24 **Table S1** Purity of the product 2'OH RNAs duplex after reductive conversion of RNAs **4a-g** with their complementary strand into unmodified duplex after 1h incubation with 5.6 mM glutathione

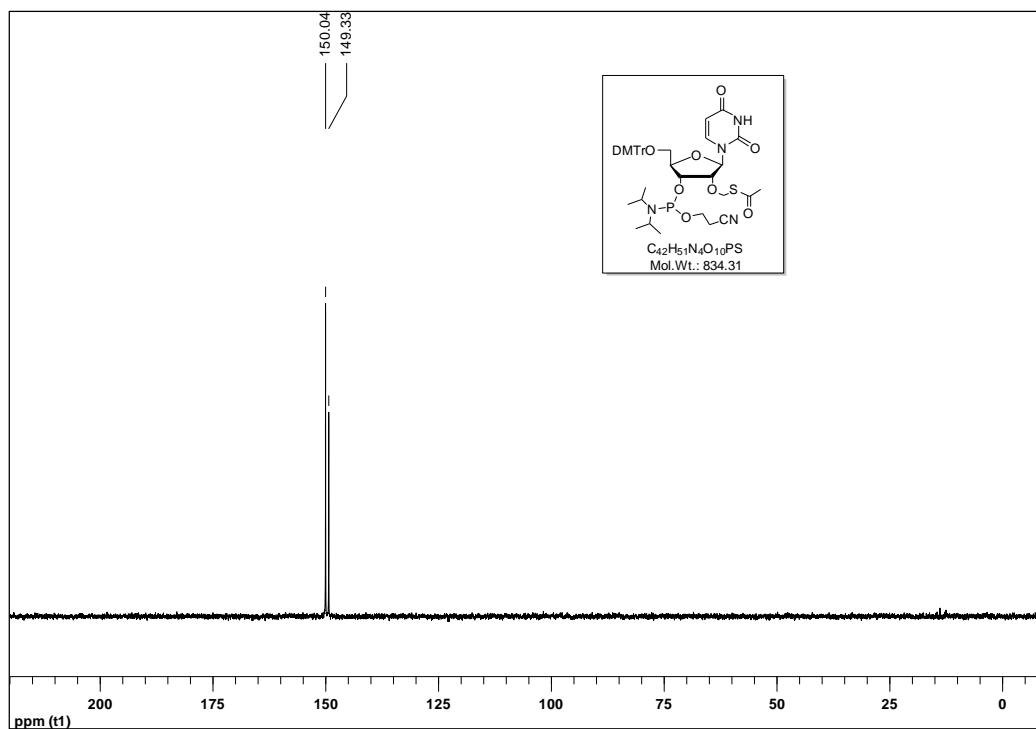


Figure S1: 121 MHz ^{31}P -NMR spectrum (CD_3CN) of 2'-O-AcSM uridine phosphoramidite **1**

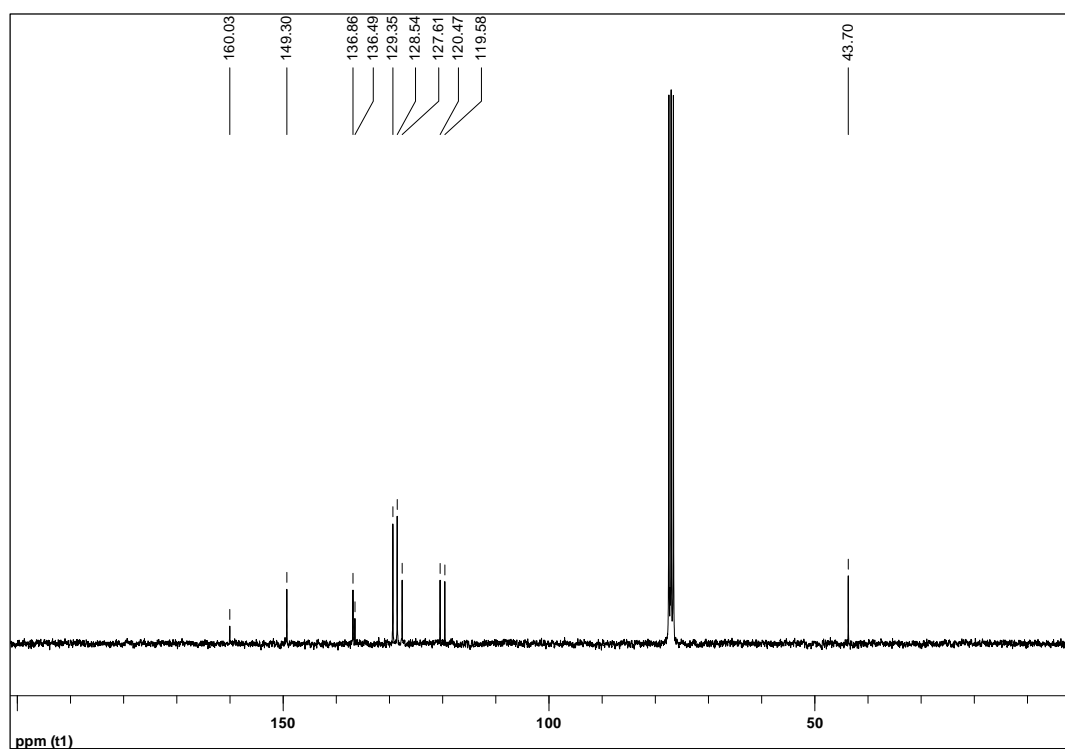
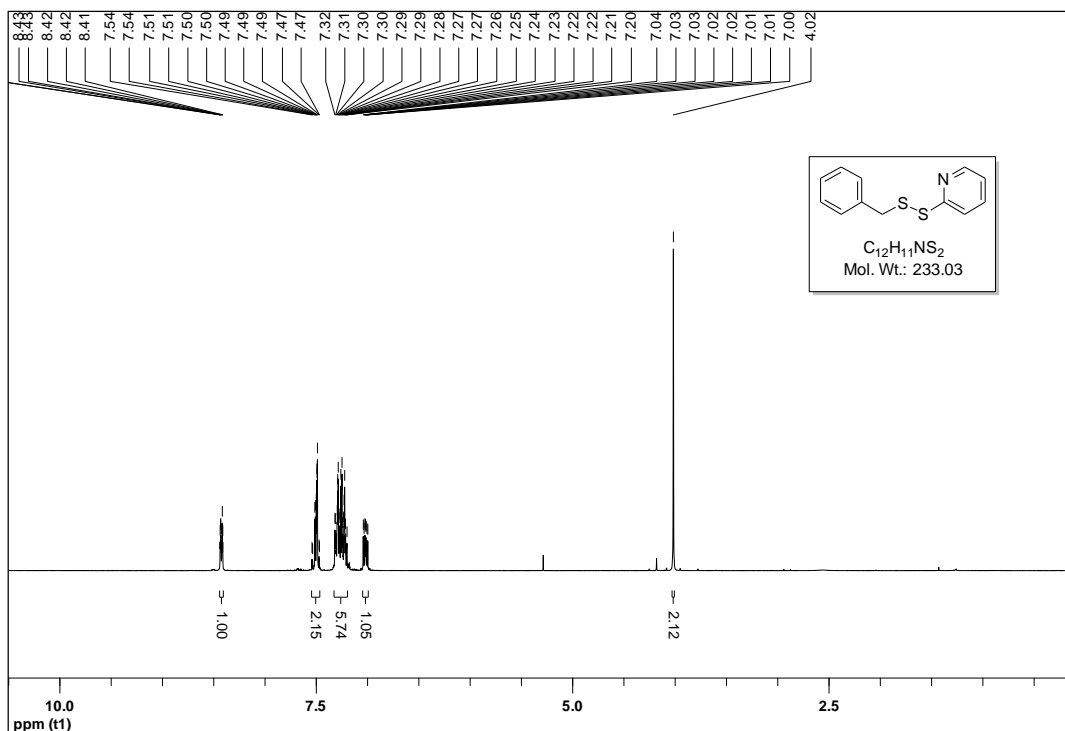


Figure S2: 300 MHz 1H -NMR and 75 MHz ^{13}C -NMR spectra ($CDCl_3$) of **2a**

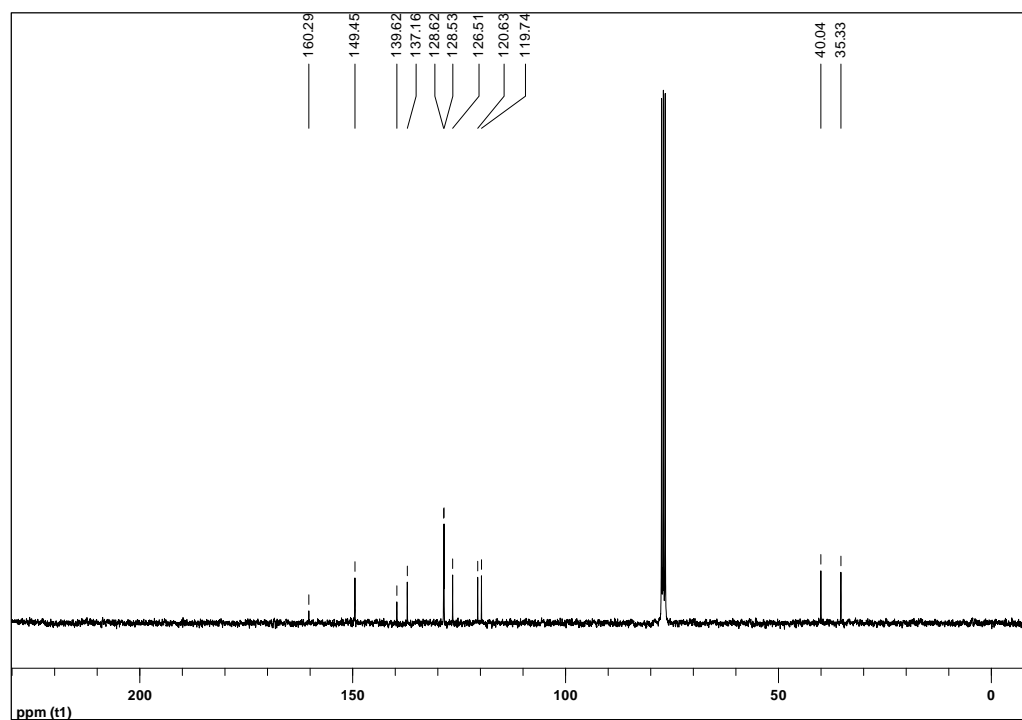
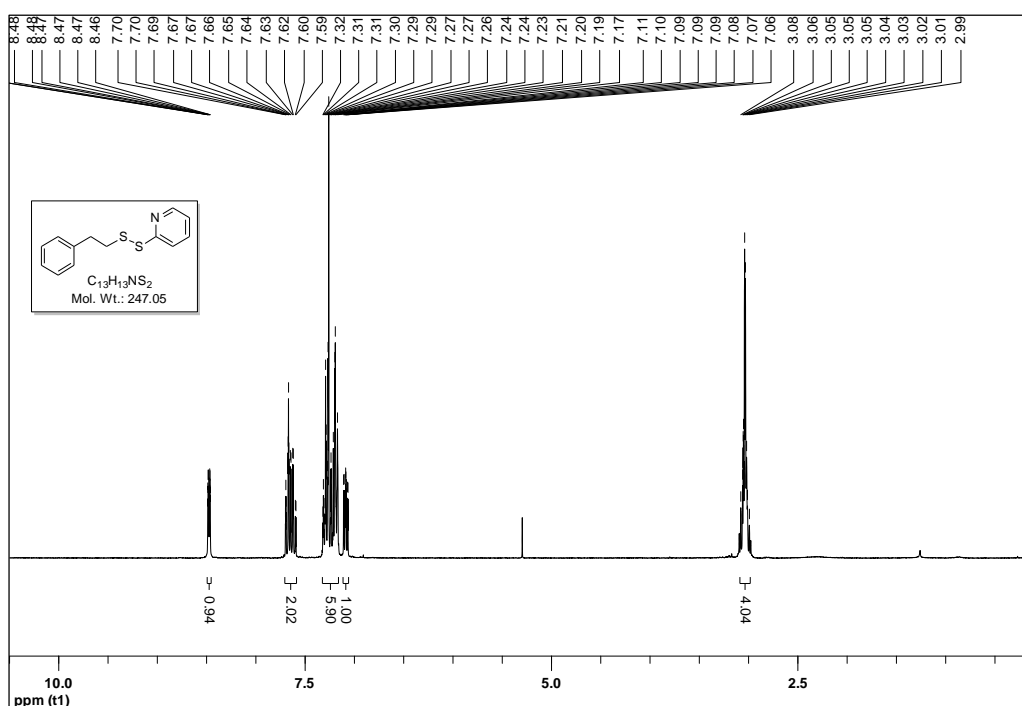


Figure S3: 300 MHz 1H -NMR and 75 MHz ^{13}C -NMR spectra ($CDCl_3$) of **2b**

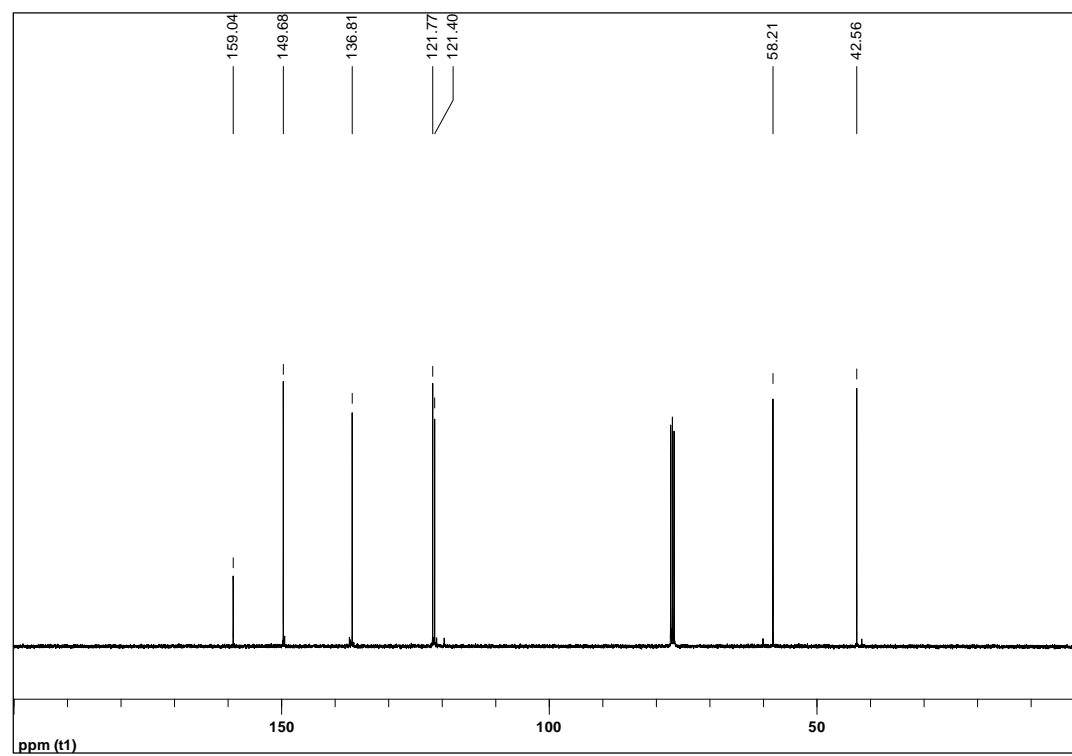
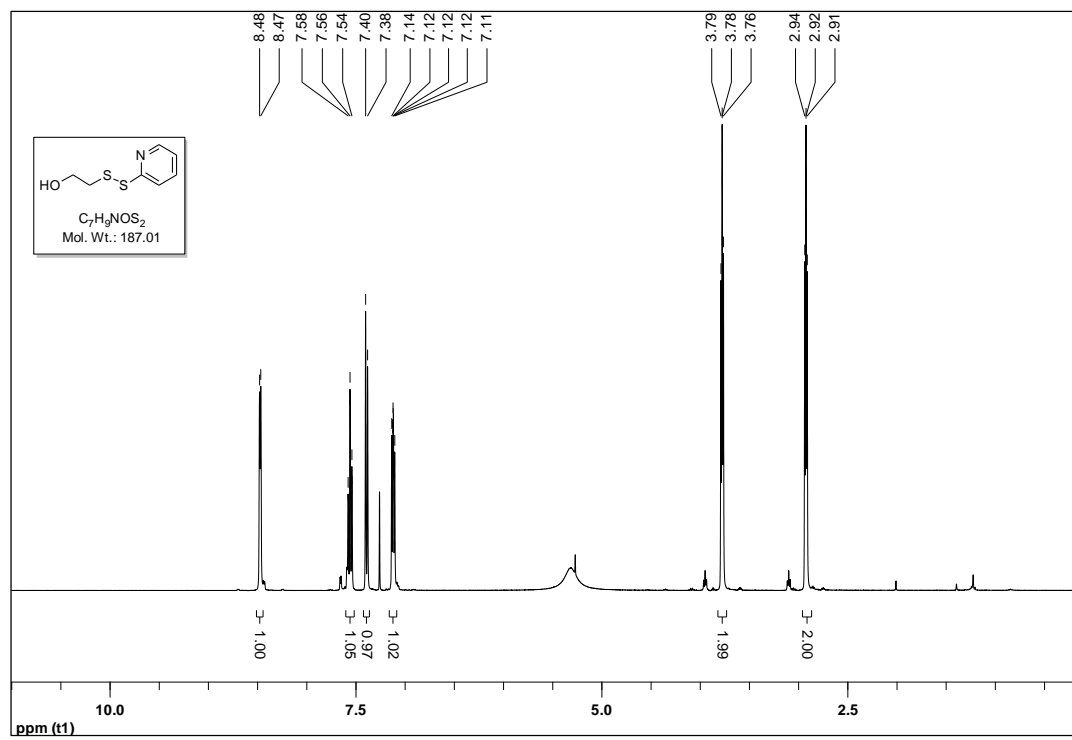


Figure S4: 400 MHz ^1H -NMR and 100 MHz ^{13}C -NMR spectra (CDCl_3) of **2c**

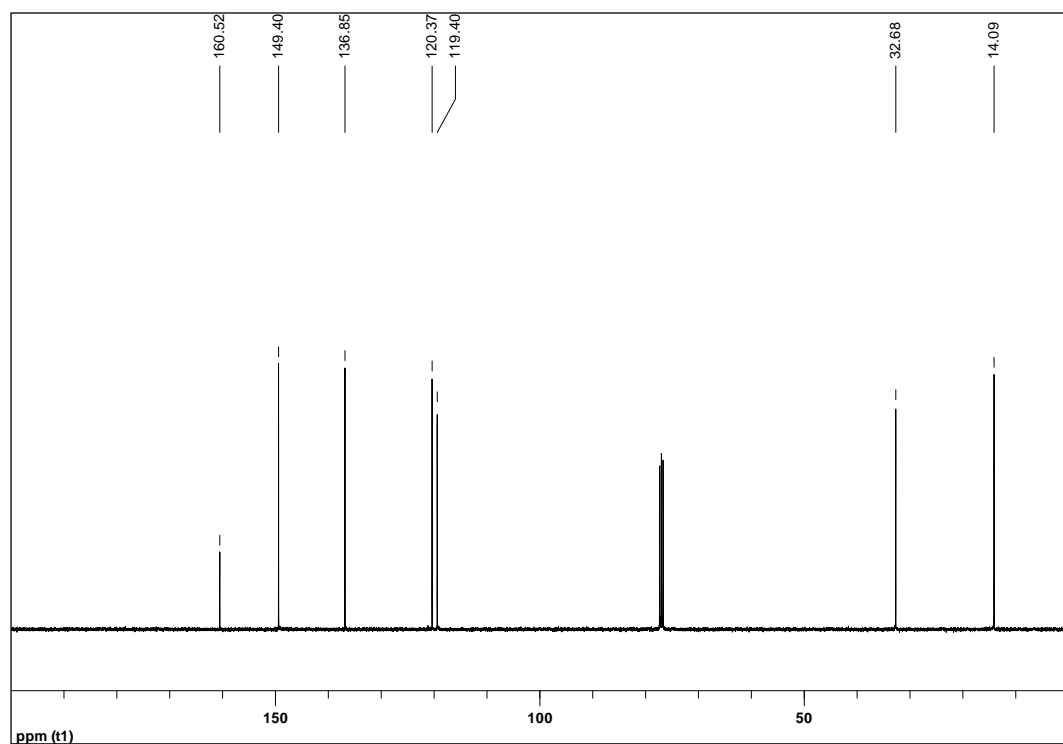
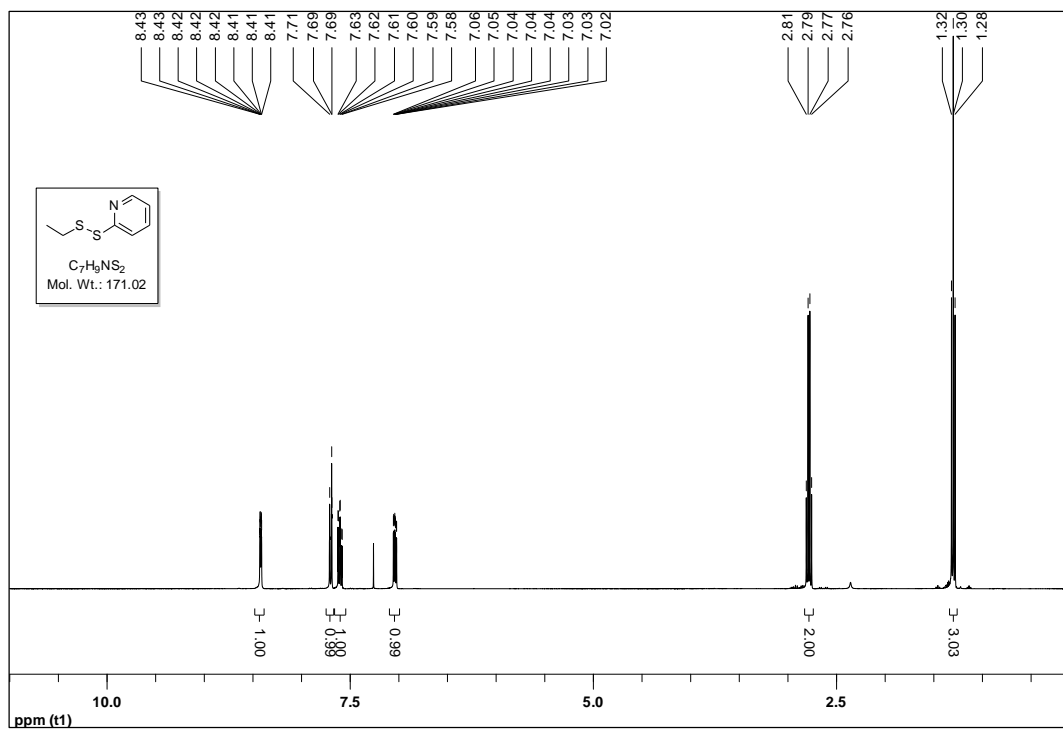


Figure S5: 400 MHz ¹H-NMR and 100 MHz ¹³C-NMR spectra (CDCl₃) of **2d**

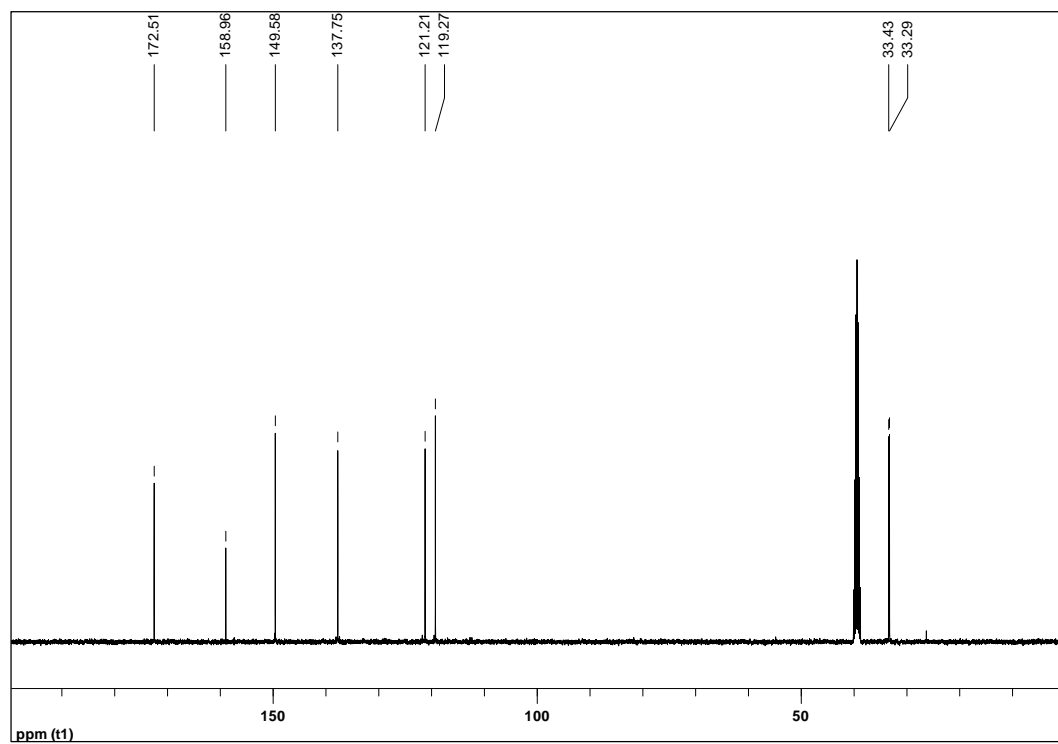
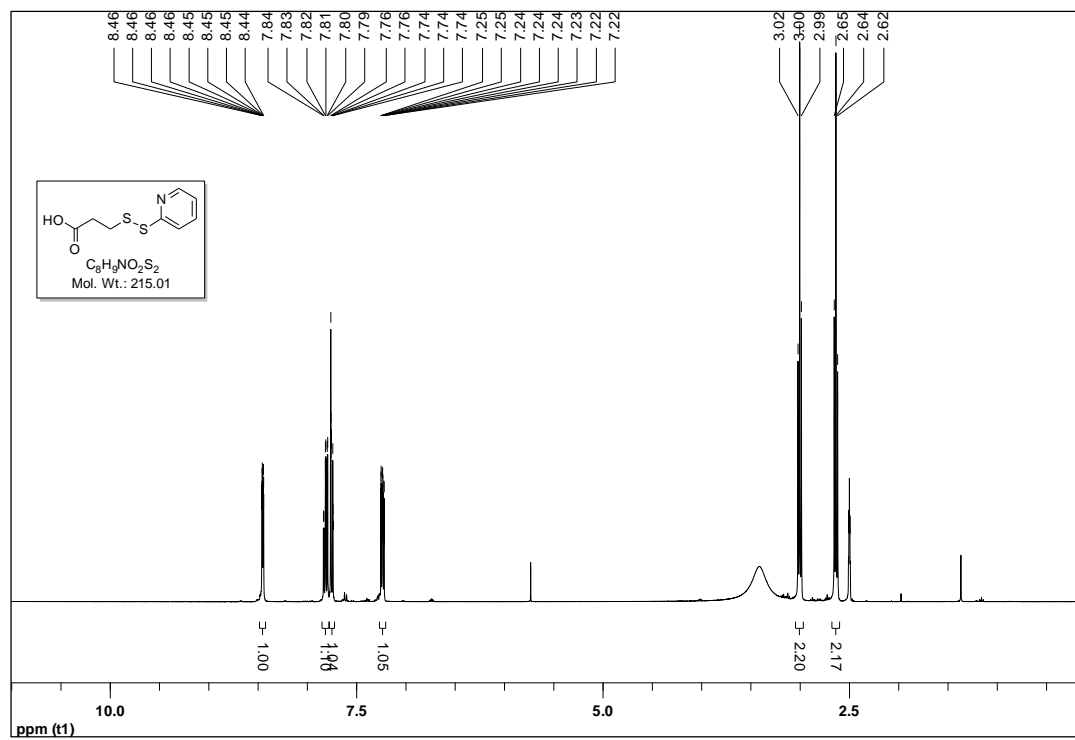
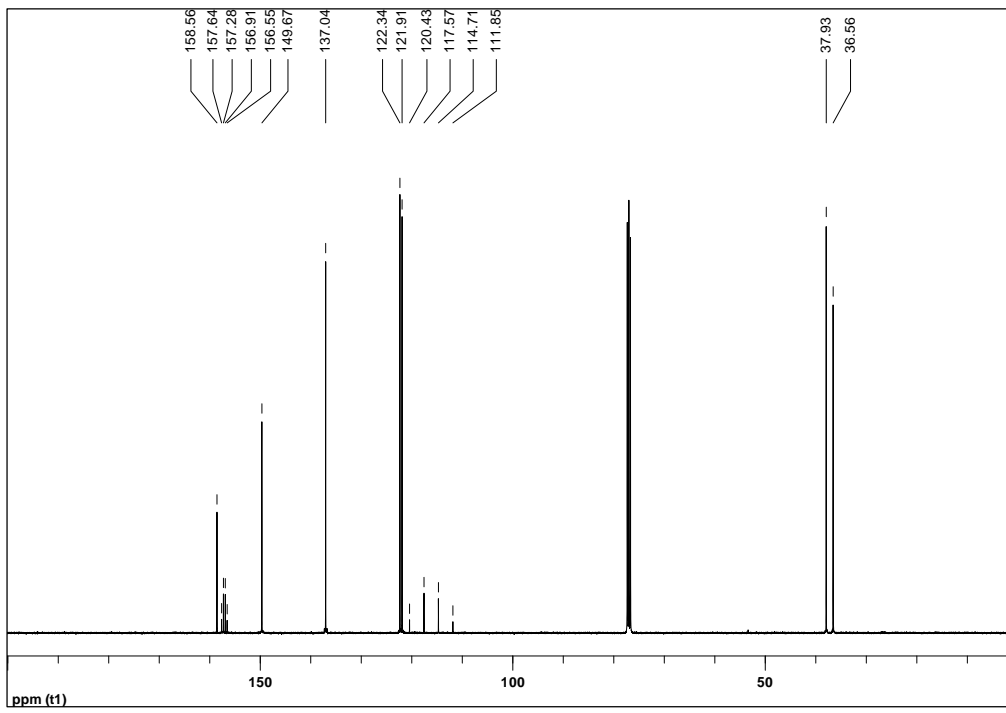
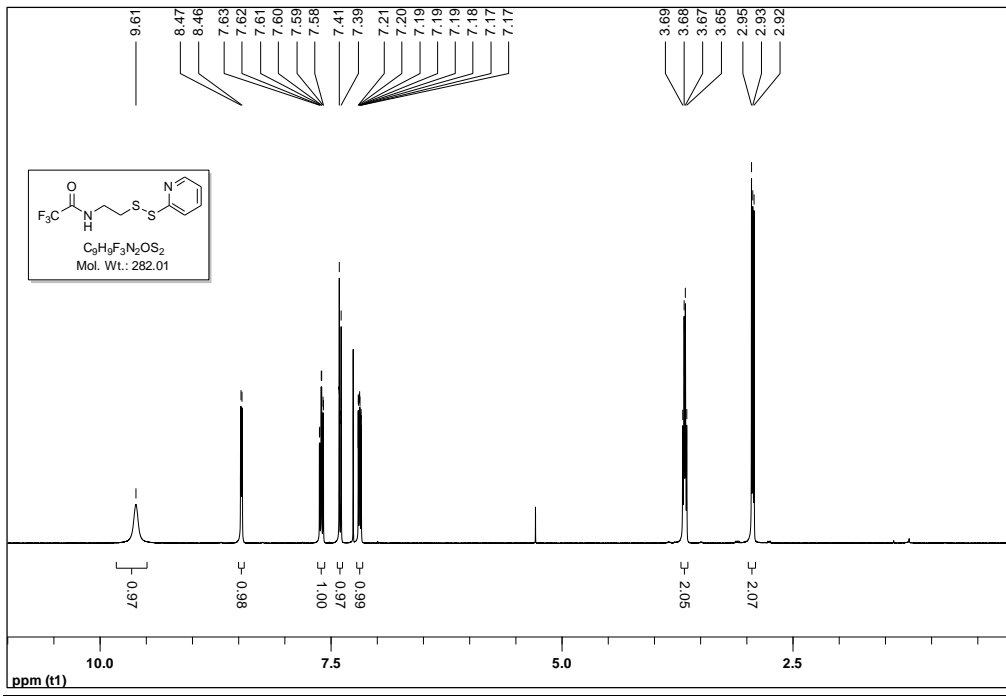


Figure S6: 400 MHz 1H -NMR and 100 MHz ^{13}C -NMR spectra (DMSO- d_6) of **2e**



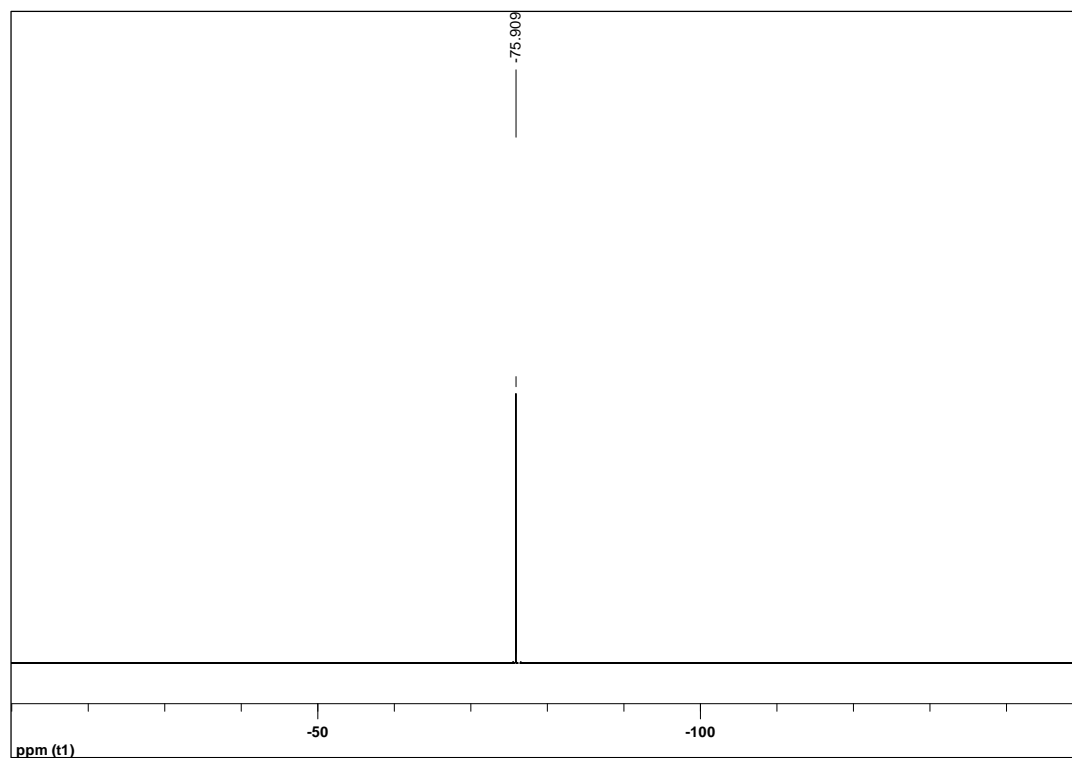
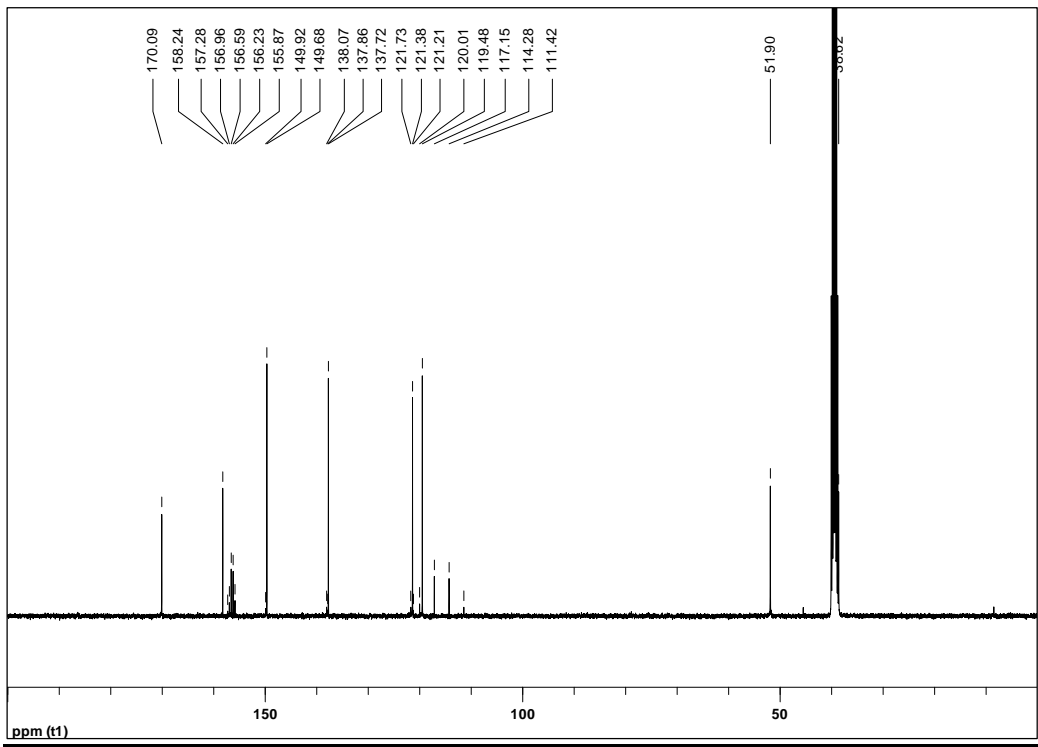
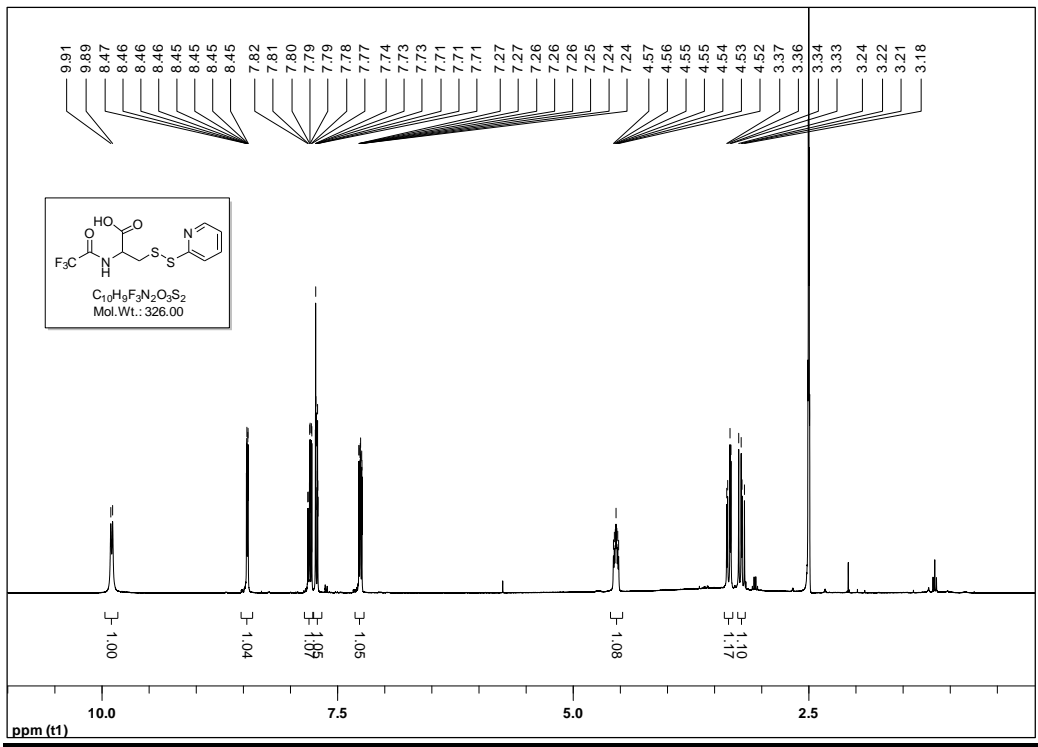


Figure S7: 400 MHz ^1H -NMR, 100 MHz ^{13}C -NMR and 160 MHz ^{19}F -NMR spectra (CDCl_3) of **2f**



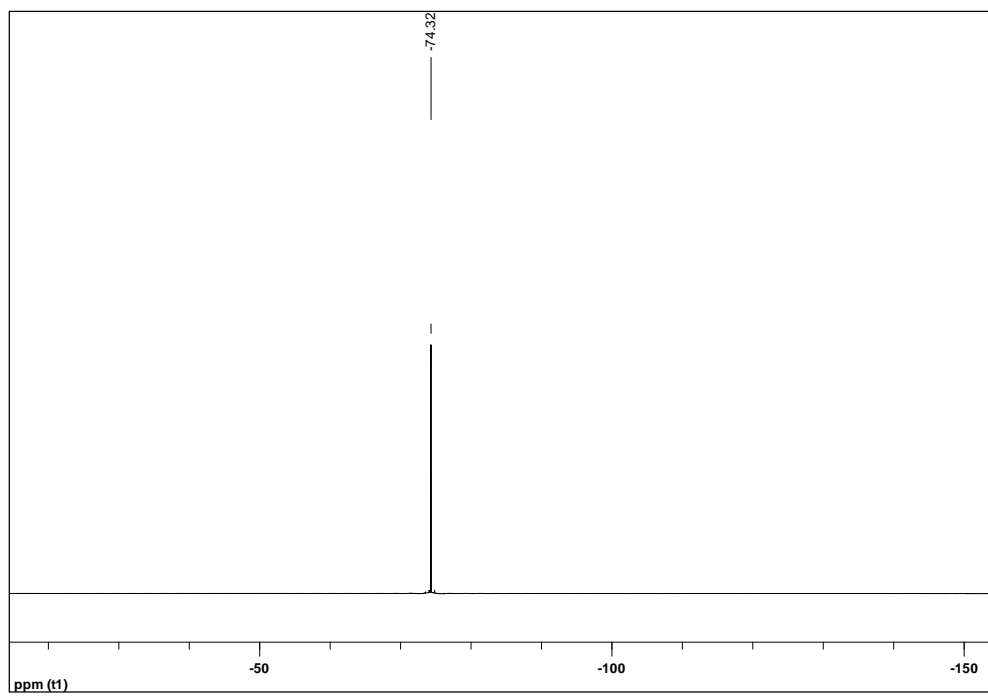


Figure S8: 400 MHz ^1H -NMR, 100 MHz ^{13}C -NMR and 160 MHz ^{19}F -NMR spectra (DMSO- d_6) of **2g**

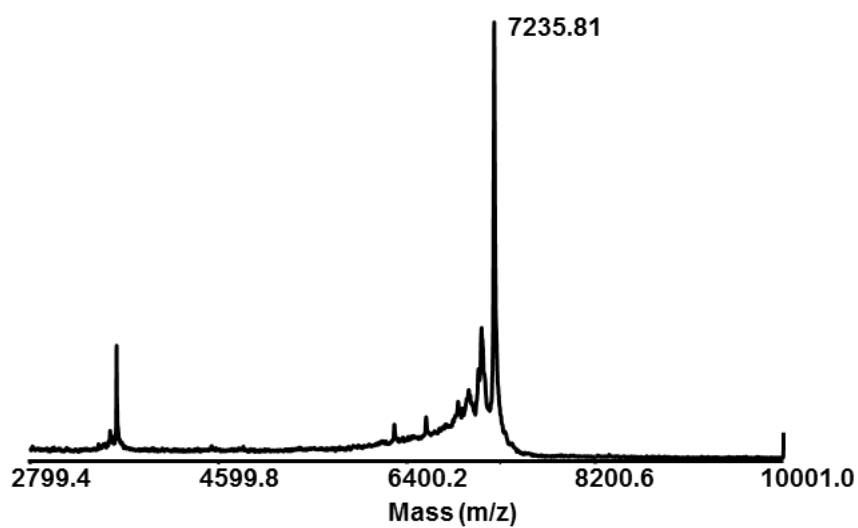
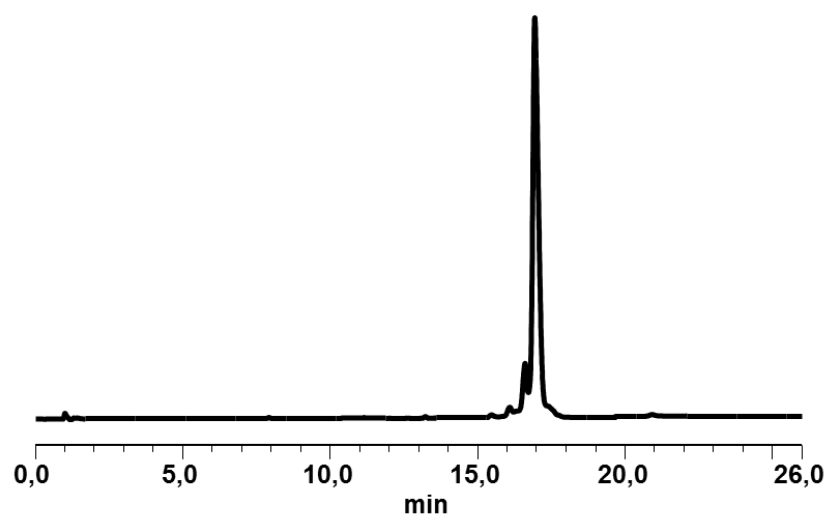


Figure S9: IEX-HPLC and MALDI-TOF MS analysis of purified RNA **4a**

IEX-HPLC analysis conditions: DNAPac® PA100, 4X250 mm, elution with a 20 min linear gradient of 30 to 100% of B in eluent A. Column temperature 75°C. Flow rate 1.5 mL.min⁻¹. λ 260 nm.

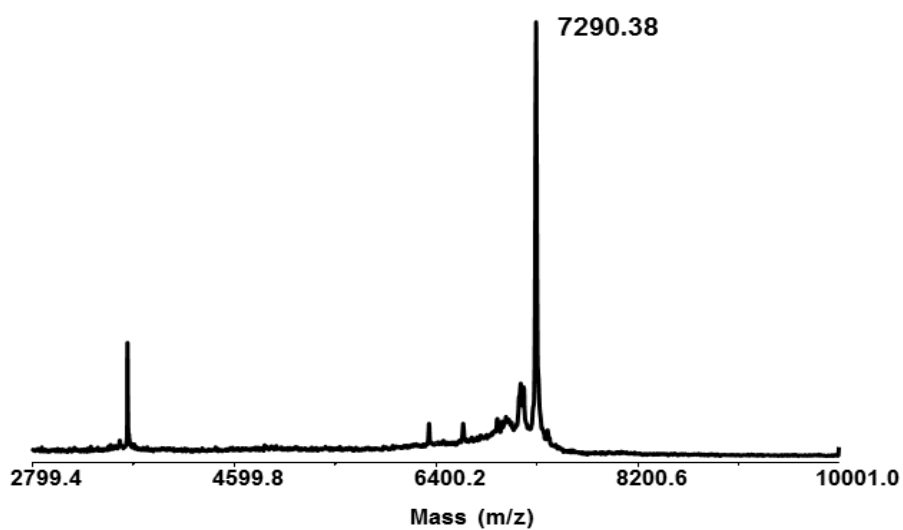
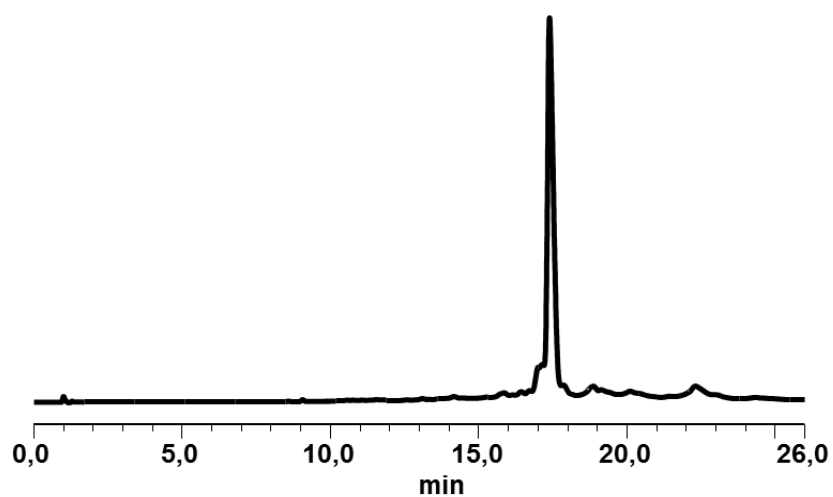


Figure S10: IEX-HPLC and MALDI-TOF MS analysis of purified RNA **4b**

IEX-HPLC analysis conditions: DNAPac® PA100, 4X250 mm, elution with a 20 min linear gradient of 30 to 100% of B in eluent A. Column temperature 75°C. Flow rate 1.5 mL.min⁻¹. λ 260 nm.

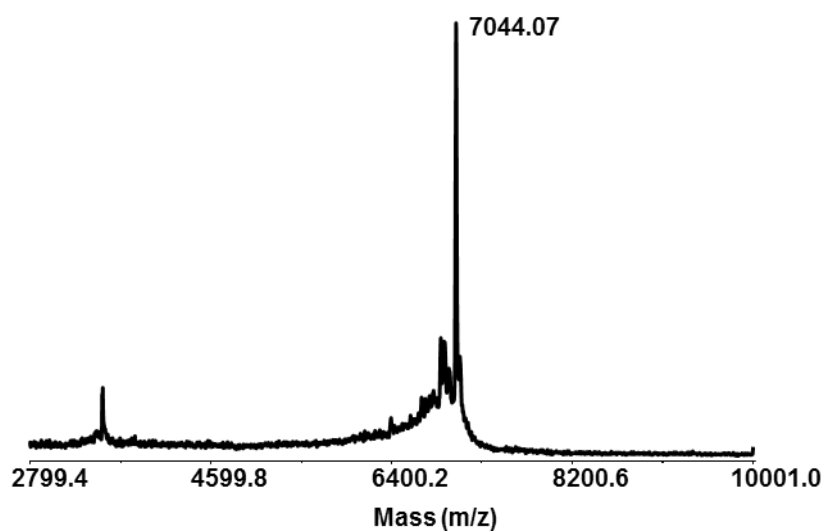
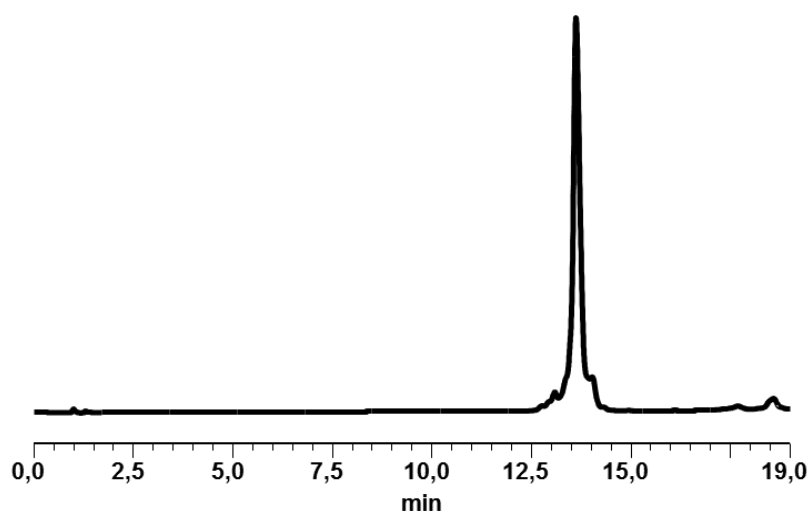


Figure S11: IEX-HPLC and MALDI-TOF MS analysis of purified RNA **4c**

IEX-HPLC analysis conditions: DNAPac® PA100, 4X250 mm, elution with a 20 min linear gradient of 30 to 100% of B in eluent A. Column temperature 75°C. Flow rate 1.5 mL.min⁻¹. λ 260 nm.

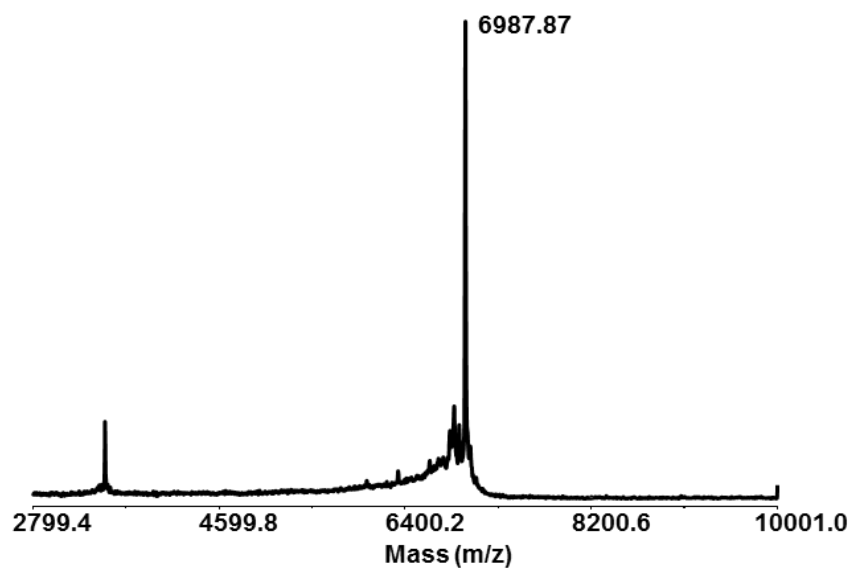
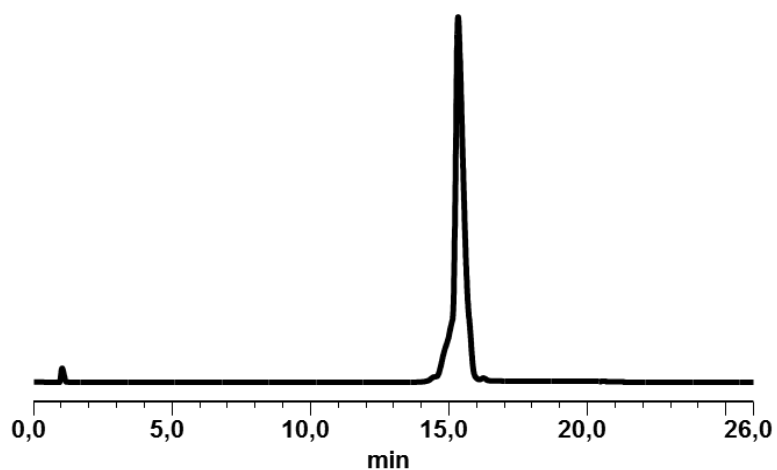


Figure S12: IEX-HPLC and MALDI-TOF MS analysis of purified RNA **4d**

IEX-HPLC analysis conditions: DNAPac® PA100, 4X250 mm, elution with a 20 min linear gradient of 30 to 100% of B in eluent A. Column temperature 75°C. Flow rate 1.5 mL.min⁻¹. λ 260 nm.

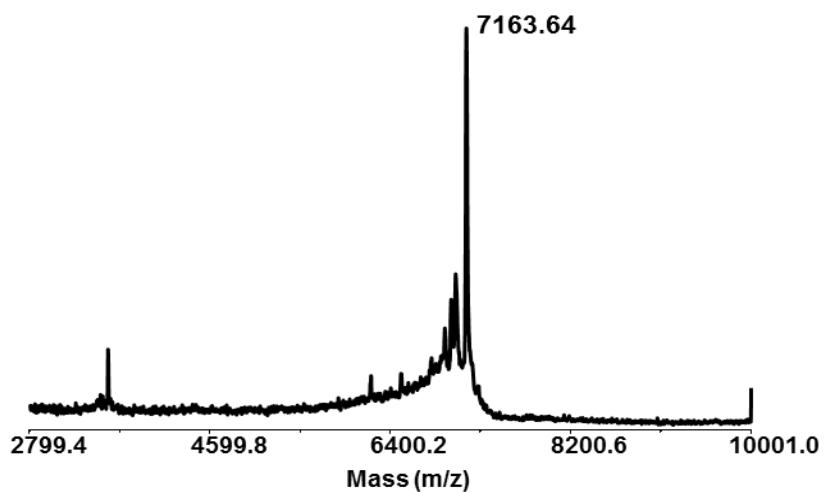
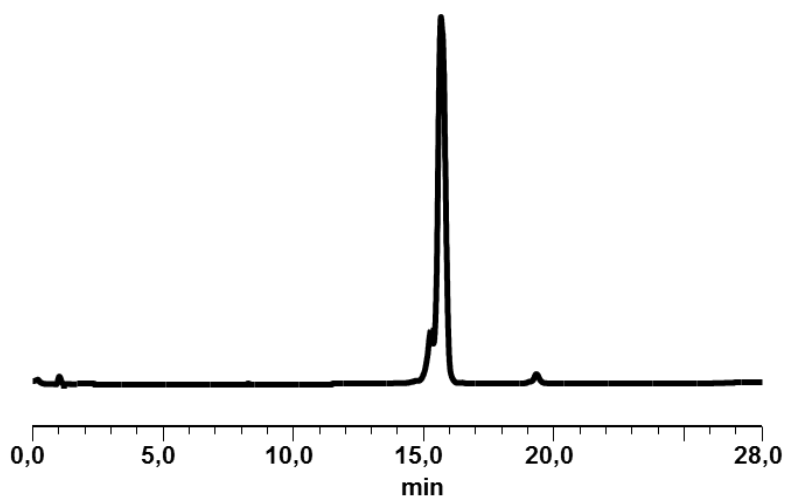


Figure S13: IEX-HPLC and MALDI-TOF MS analysis of purified RNA **4e**

IEX-HPLC analysis conditions: DNAPac® PA100, 4X250 mm, elution with a 20 min linear gradient of 30 to 100% of B in eluent A. Column temperature 75°C. Flow rate 1.5 mL.min⁻¹. λ 260 nm.

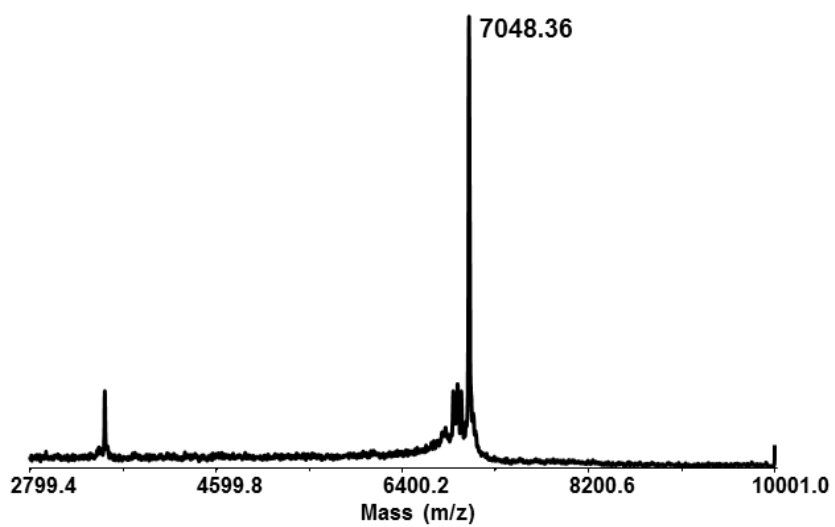
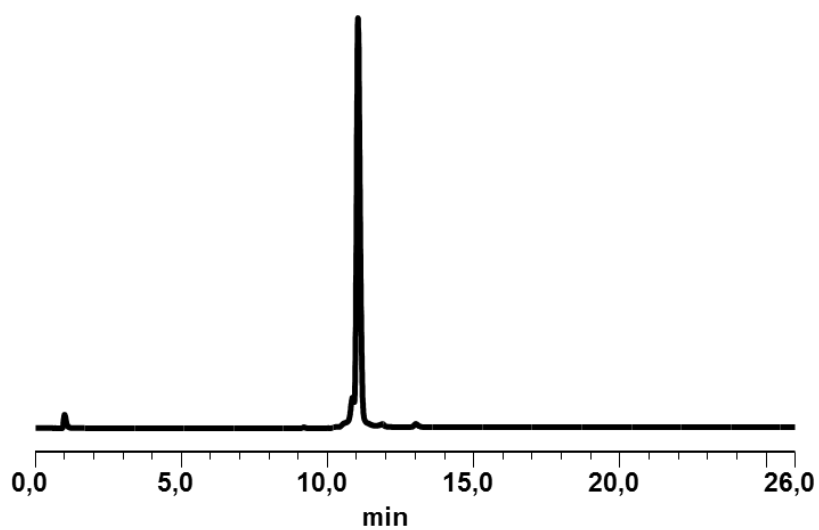


Figure S14: IEX-HPLC and MALDI-TOF MS analysis of purified RNA **4f**

IEX-HPLC analysis conditions: DNAPac® PA100, 4X250 mm, elution with a 20 min linear gradient of 30 to 100% of B in eluent A. Column temperature 75°C. Flow rate 1.5 mL.min⁻¹. λ 260 nm.

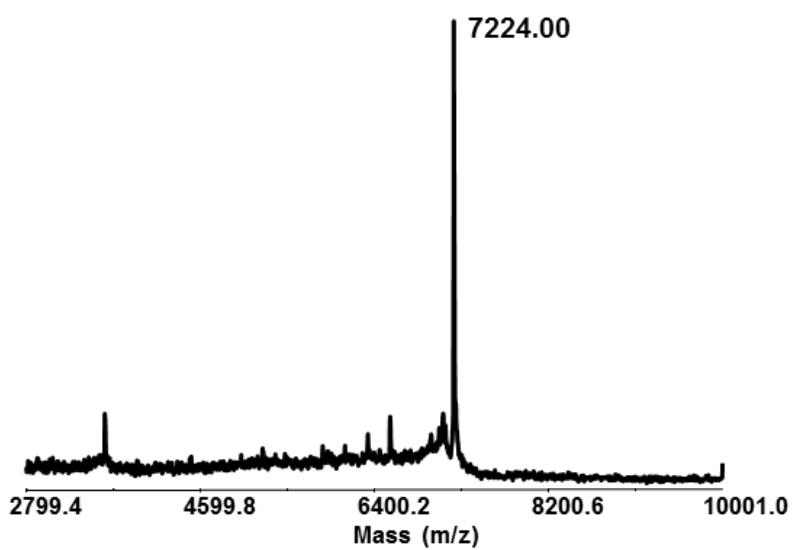
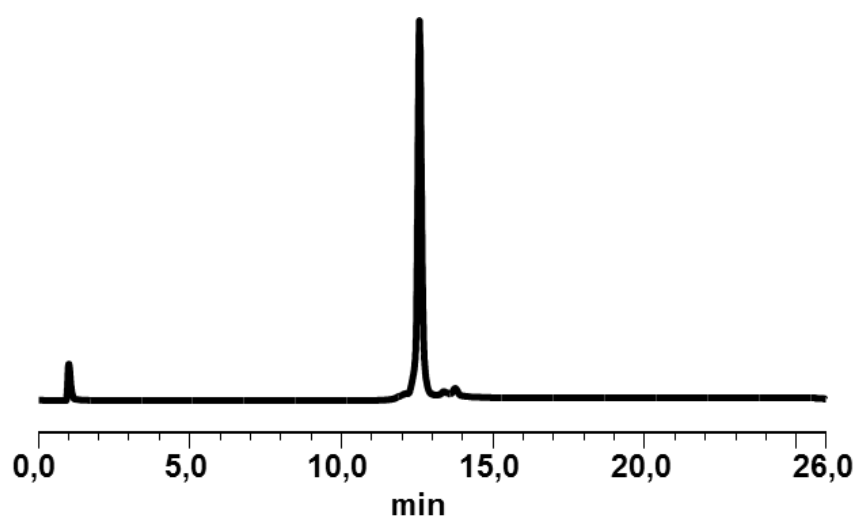


Figure S15: IEX-HPLC and MALDI-TOF MS analysis of purified RNA **4g**

IEX-HPLC analysis conditions: DNAPac® PA100, 4X250 mm, elution with a 20 min linear gradient of 30 to 100% of B in eluent A. Column temperature 75°C. Flow rate 1.5 mL.min⁻¹. λ 260 nm.

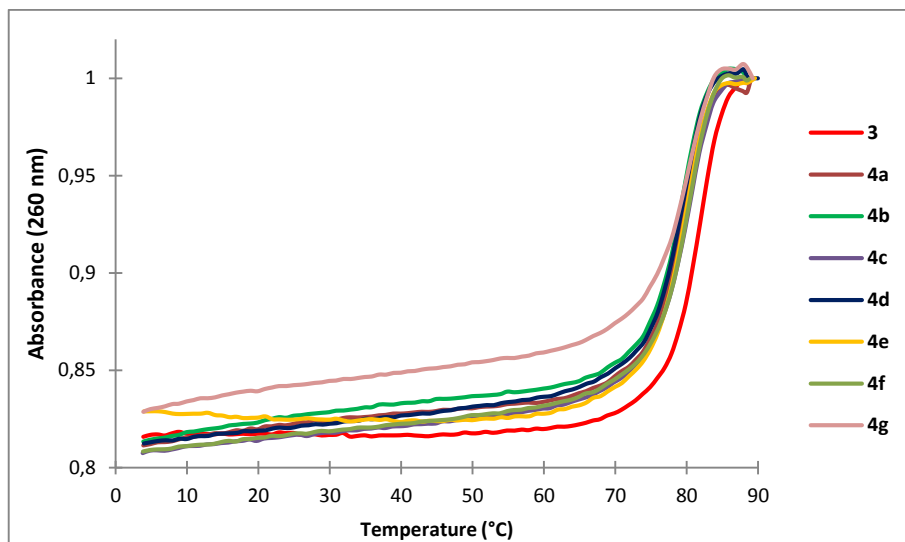


Figure S16: Melting curves of RNAs **3** and **4a-g** with their complementary strand

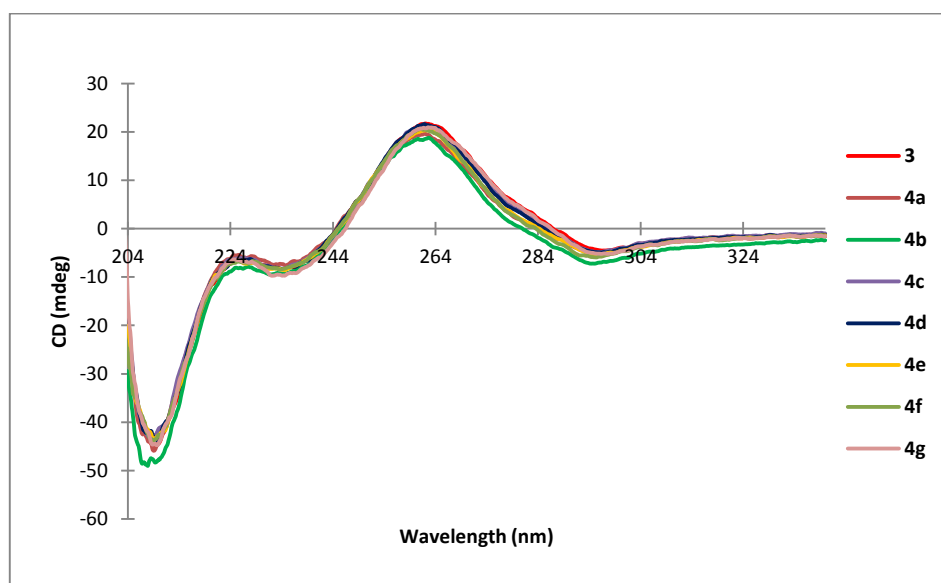
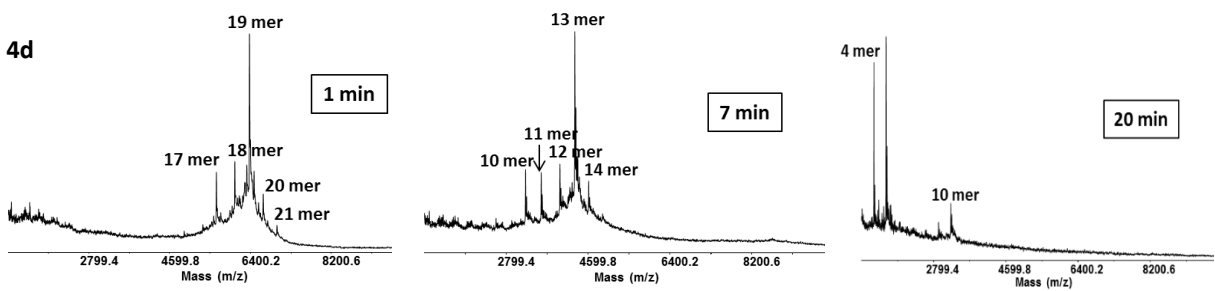
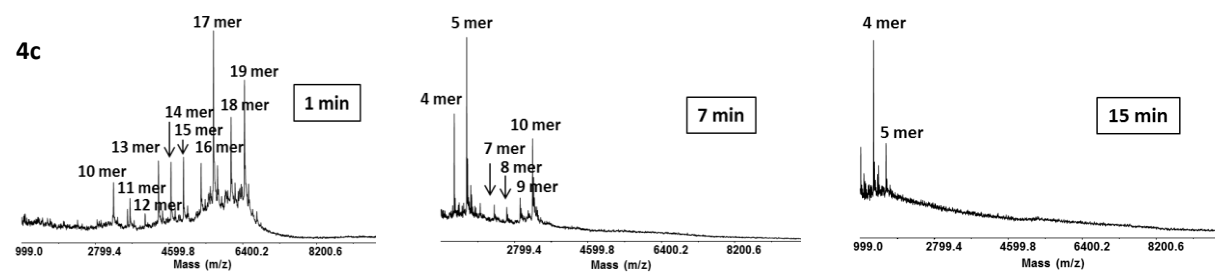
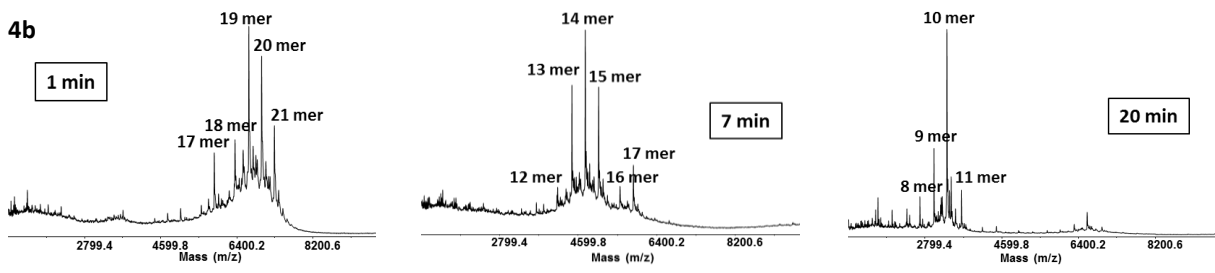
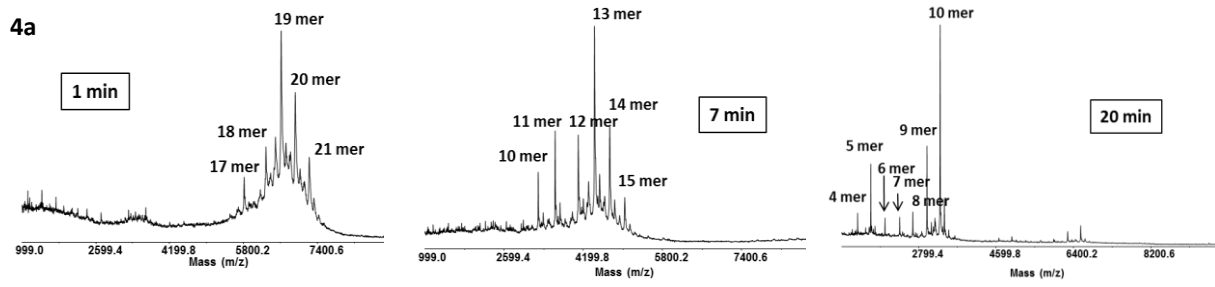
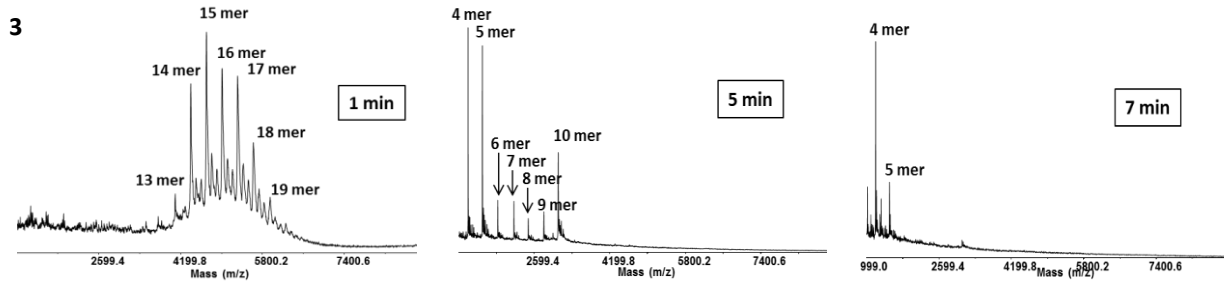


Figure S17: CD spectroscopy curves of RNAs **3** and **4a-g** with their complementary strand



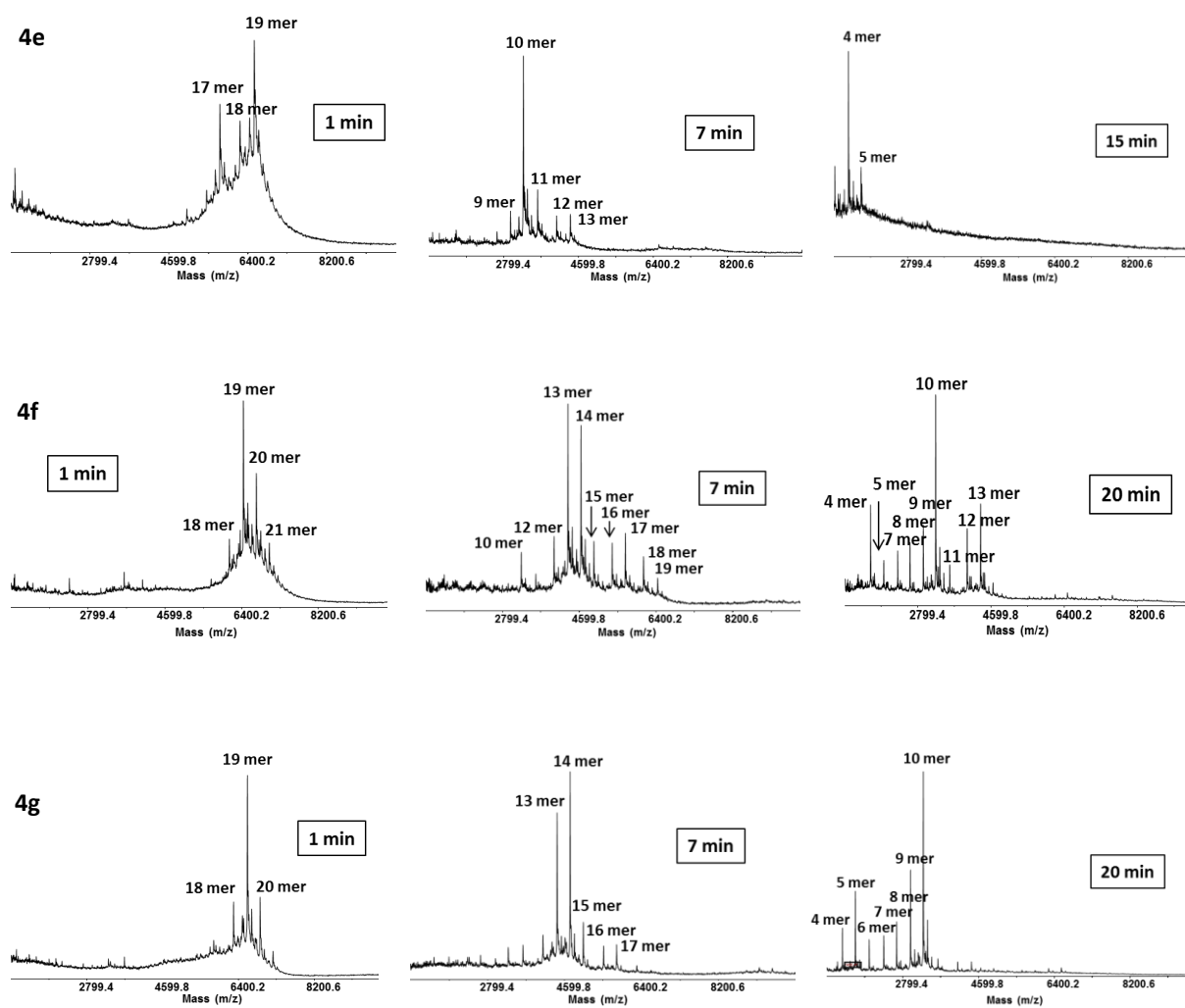


Figure S18: MALDI-TOF MS spectra of RNAs **3** and **4a-g** incubated with SVPDE

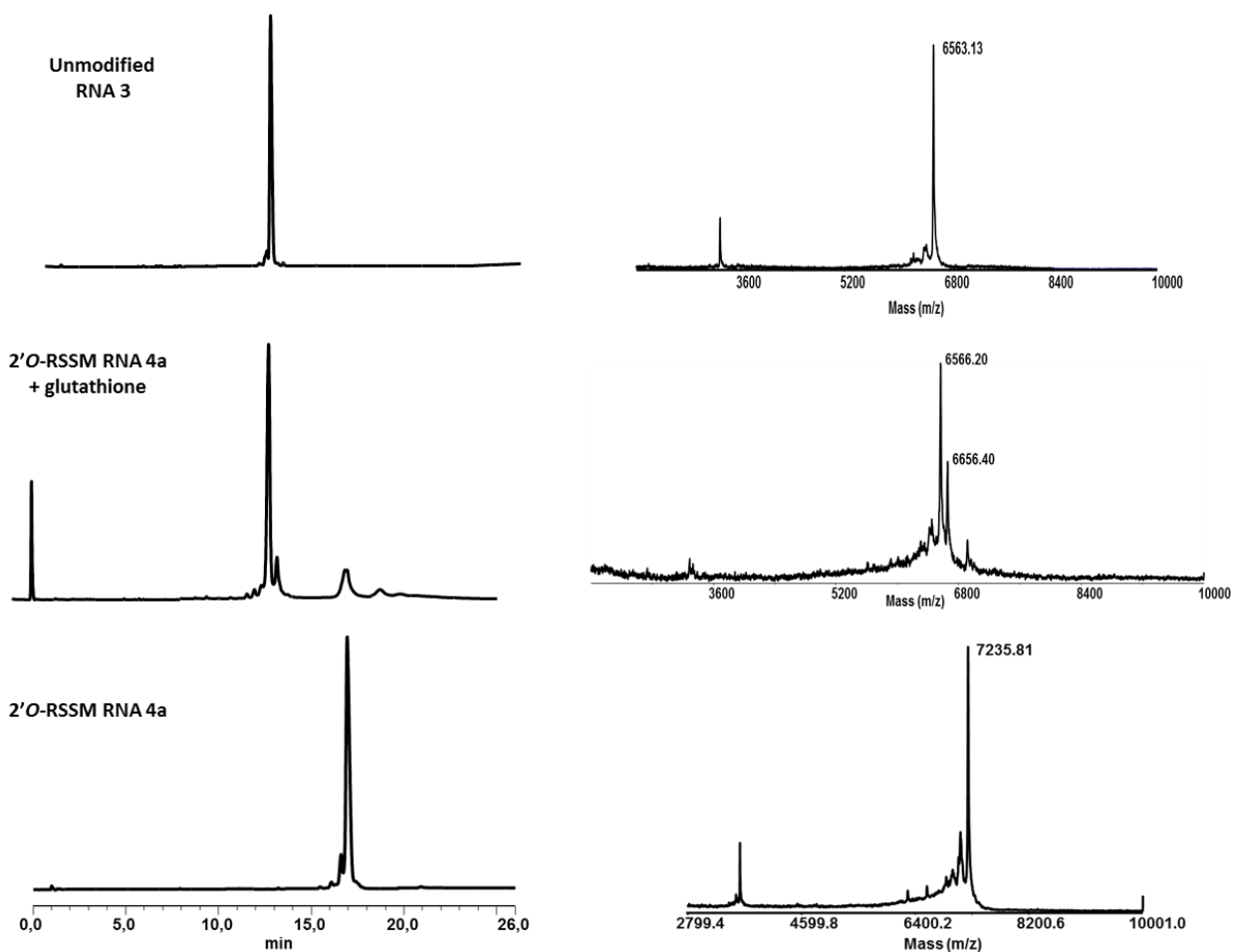
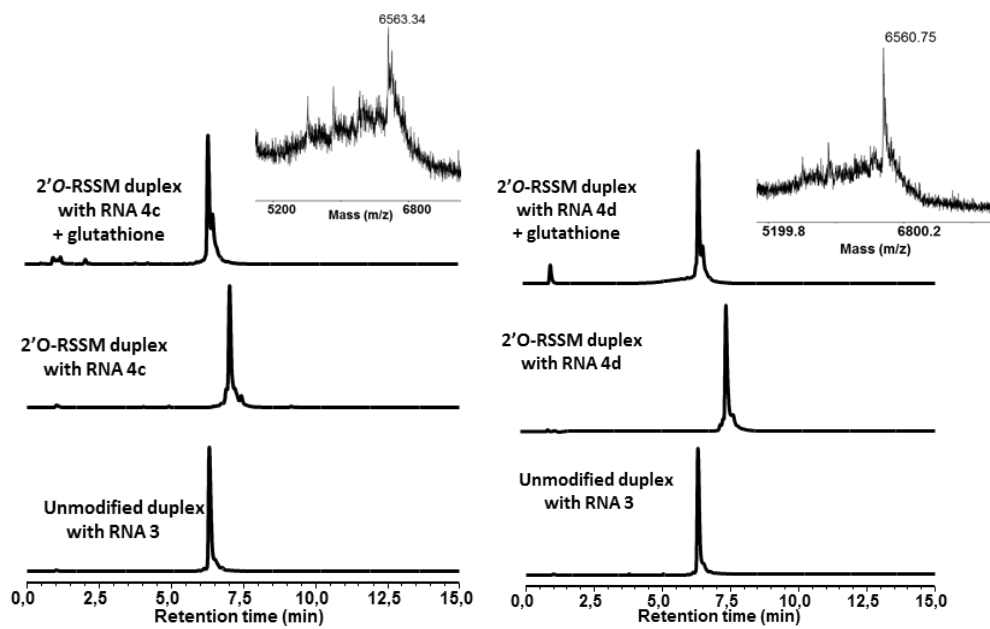
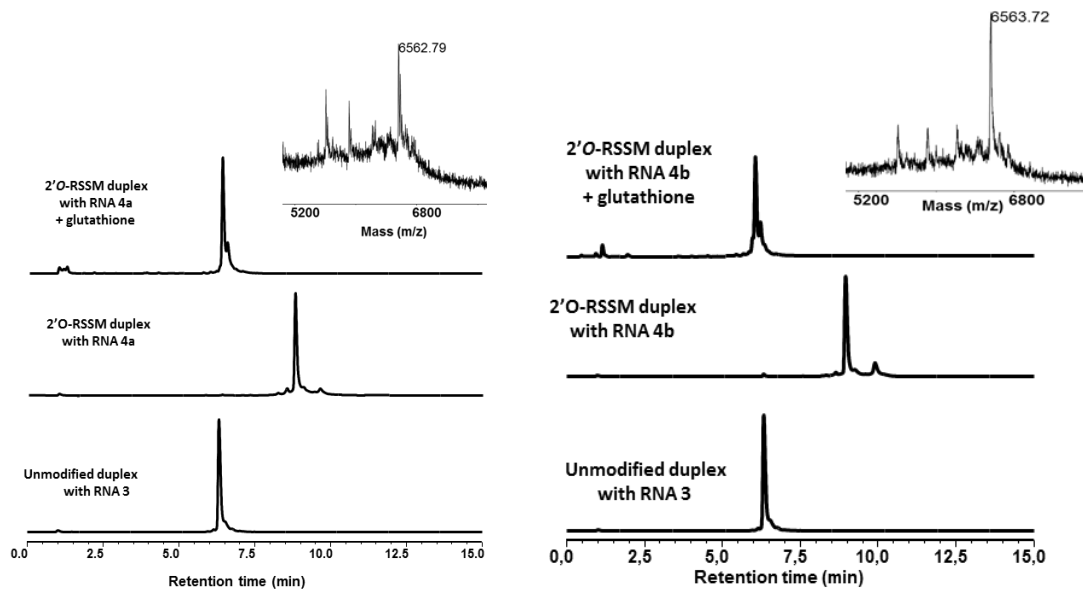


Figure S19 : IEX-HPLC and MALDI-TOF Mass spectra of reductive conversion of RNAs **4a** into unmodified RNA **3** after 1h incubation with 5.6 mM glutathione



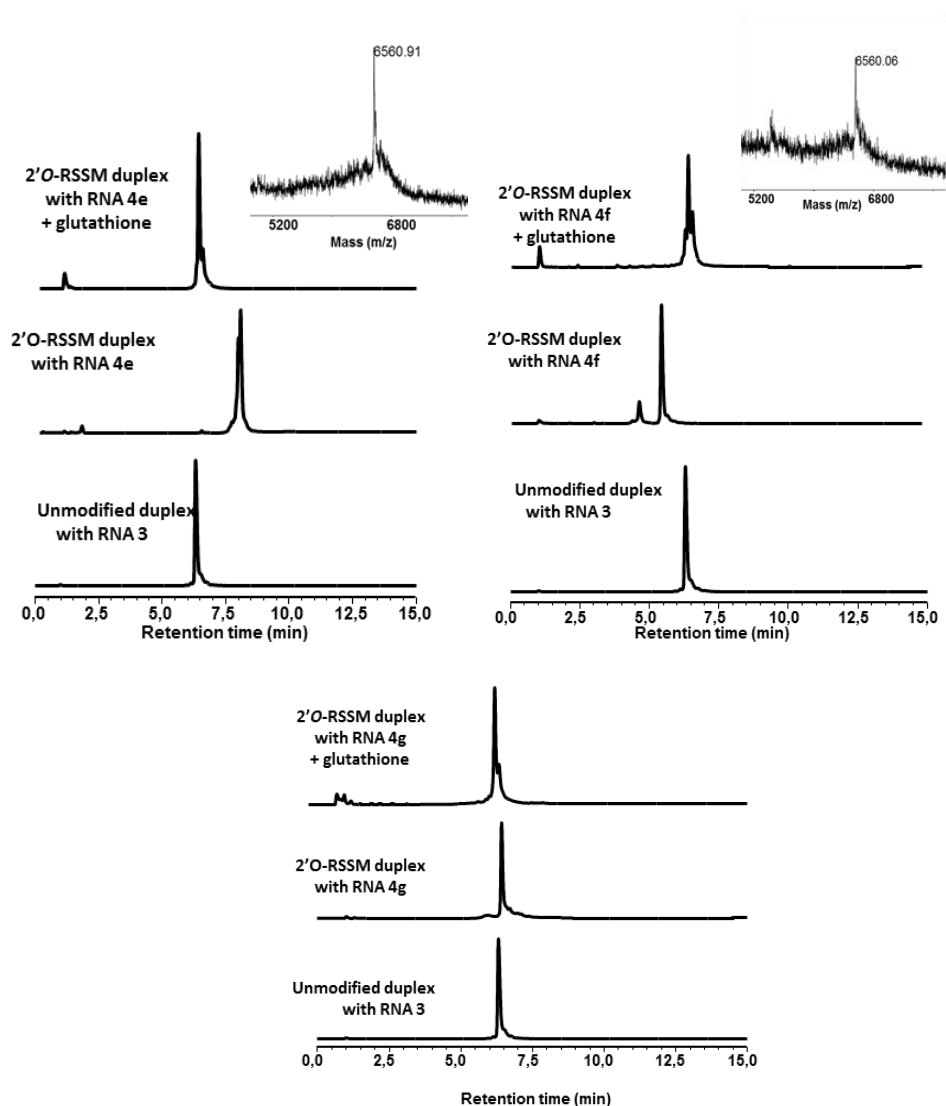


Figure S20 : IEX-HPLC and MALDI-TOF Mass spectra of reductive conversion of RNAs **4a-g** with their complementary strand into unmodified duplex after 1h incubation with 5.6 mM glutathione

2'-O-RSSM RNA duplexes	Purity of products RNAs
4a	94%
4b	85%
4c	92%
4d	94%
4e	95%
4f	70%
4g	93%

Table S1 : Purity of the product 2'-OH RNAs duplex after reductive conversion of RNAs **4a-g** with their complementary strand into unmodified duplex after 1h incubation with 5.6 mM glutathione