



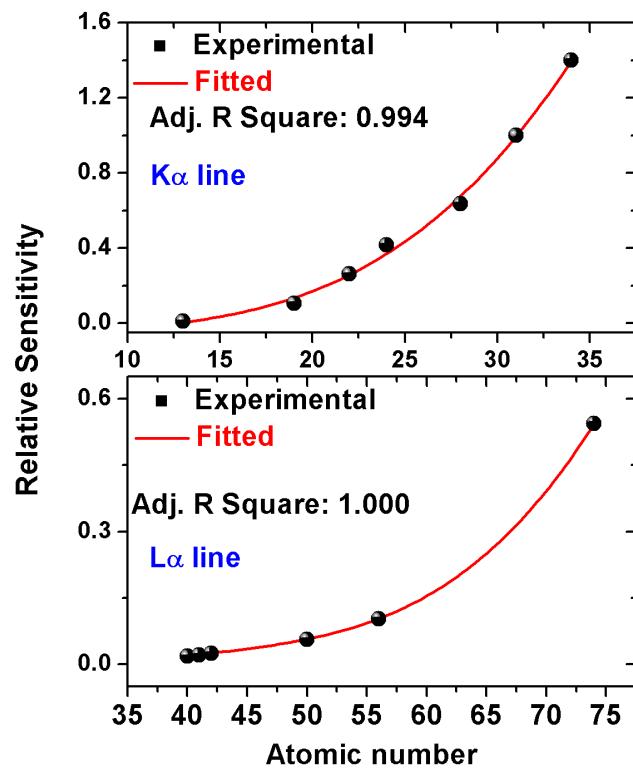
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**Supporting information for article:**

**Direct non-destructive total reflection X-ray fluorescence elemental determinations in zirconium alloy samples**

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**Figure S1** Plots of relative sensitivity values of  $K\alpha$  and  $L\alpha$  lines of different elements obtained with TXRF spectra measured at 14 keV excitation energy against respective element atomic number

**Table S1** Comparison of TXRF determined concentrations of the trace elements present in Zr-2.5 % Nb alloy (Sample-B) and Zircalloy-4 (Sample-D) sample determined by using relative sensitivity and FP (all values in ppm unless mentioned different)

Sample B (Zr-2.5%Nb alloy)			Sample D (Zircalloy-4)			
Elements	Conc. Determined using RS values (A)	Conc. Determined using FP based analysis (B)	A/B ratio	Conc. Determined using RS values (C)	Conc. Determined using FP based analysis (D)	C/D ratio
Na	4050 ± 70	3900 ± 100	1.0	0.5 ± 0.1 (%)	0.38 ± 0.02 (%)	1.4
Mg	1020 ± 40	960 ± 60	1.1	0.28 ± 0.02 (%)	0.26 ± 0.02 (%)	1.1
Al	4600 ± 300	4200 ± 200	1.1	0.85 ± 0.04 (%)	0.77 ± 0.03 (%)	1.1
Si	8200 ± 600	8200 ± 600	1.0	1.10 ± 0.02 (%)	1.1 ± 0.02 (%)	1
Ti	56 ± 5	51 ± 4	1.1	83 ± 1	76 ± 1	1.1
Cr	192 ± 1	192 ± 1	1.1	0.221 ± 0.002 (%)	0.197 ± 0.002 (%)	1.1
Mn	25 ± 2	21 ± 2	1.2	43 ± 2	36 ± 2	1.2
Fe	1720 ± 10	1850 ± 10	0.9	0.577 ± 0.001 (%)	0.621 ± 0.009 (%)	0.9
Ni	62 ± 3	57 ± 2	1.1	60 ± 10	50 ± 10	1.2
Cu	69 ± 1	69 ± 1	1.0	151 ± 1	139 ± 1	1.1
Zn	275 ± 5	169 ± 5	1.0	897 ± 6	897 ± 7	1
Sn	ND	ND	-	0.234 ± 0.003 (%)	0.229 ± 0.003 (%)	1
Hf	27 ± 2	29 ± 2	0.9	1.42 ± 0.02 (%)	1.43 ± 0.02 (%)	1
W	4 ± 2	4 ± 2	1.0	320 ± 6	324 ± 6	1
Pb	73 ± 1	110 ± 1	0.7	229 ± 5	345 ± 9	0.7

The values in “±” indicate standard deviation  $1\sigma$  for  $n = 3$