Suporting Information for:

Multifunctional optical sensing platform of temperature, pressure (vacuum) and laser power density: $NaYF_4$: Gd^{3+}, Yb^{3+}, Er^{3+} nanomaterial as luminescent thermometer, manometer and power meter

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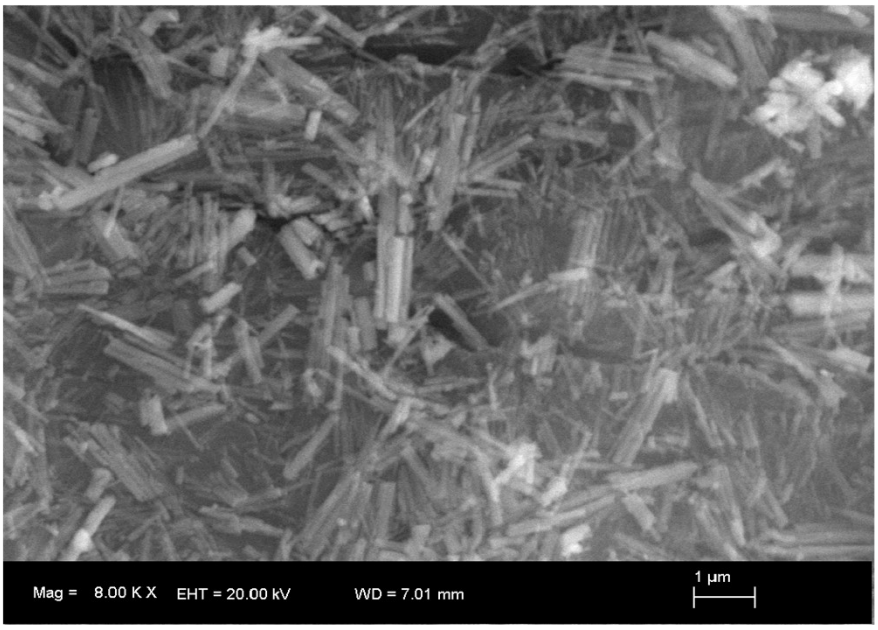

Figure S1. SEM images of $NaYF_4$: Gd^{3+}, Yb^{3+}, Er^{3+} nanoparticles crystallizing in rod-shape.

Table S1. Composition study for the elements in $NaYF_4$: Gd, Yb, Er nanoparticles.

Element	Line Type	Expected Atomic %	Found Atomic %
F	K series	65.64	65.63
Na	K series	14.18	14.19
Y	L series	15.73	15.58
Gd	L series	2.02	2.04
Er	L series	0.41	0.48
Yb	L series	2.02	2.07
Total:		100.00	100.00

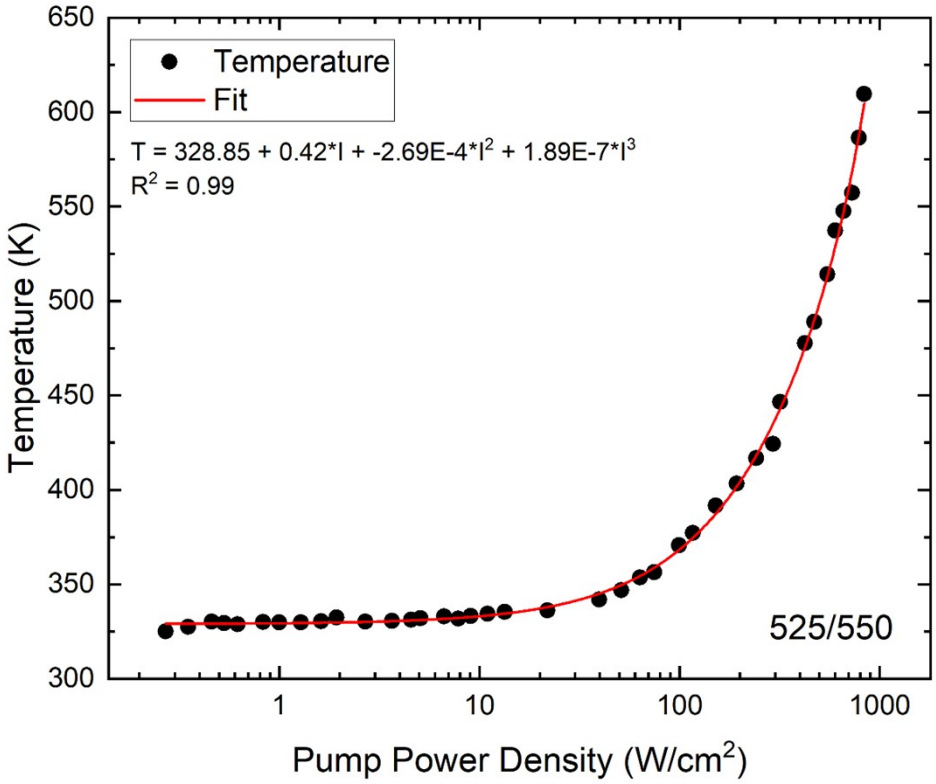

Figure S2. Relation between temperature and pump power density on the sample, obtained by the ratio between the LIR (525/550nm) and temperature.

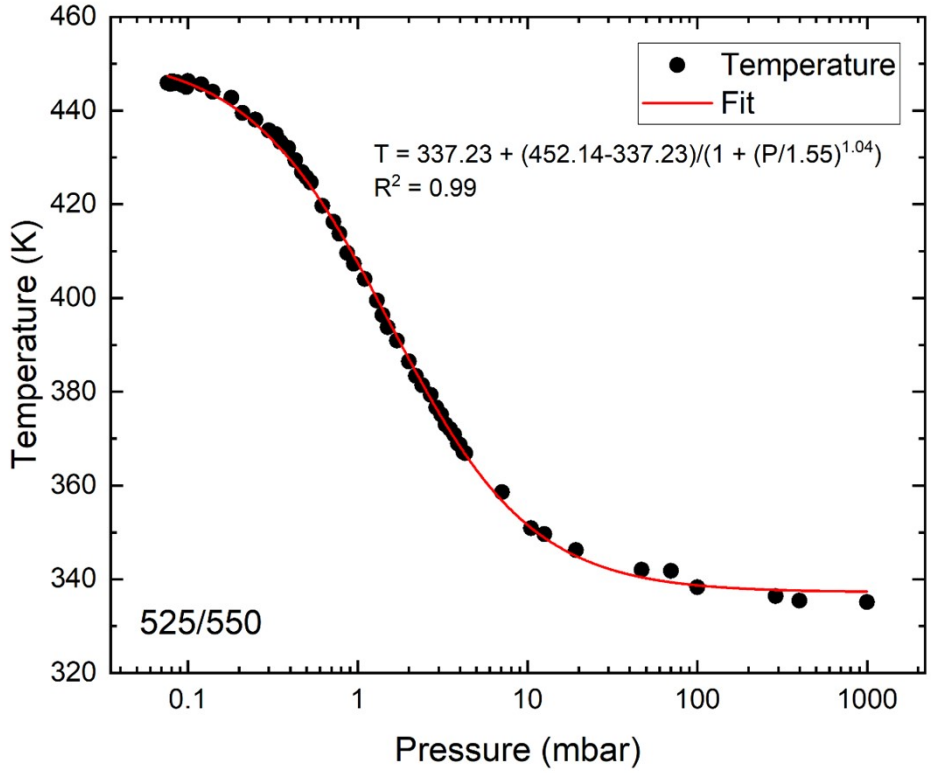

Figure S3. Relation between temperature and pressure on the sample, obtained by the ratio between the LIR (525/550nm) and temperature.