

Integrated process for the recovery of yttrium and europium from CRT phosphor waste

Federica Forte, Lourdes Yurramendi, José Luis Aldana, Bieke Onghena and
Koen Binnemans*

Electronic Supporting Information (ESI)

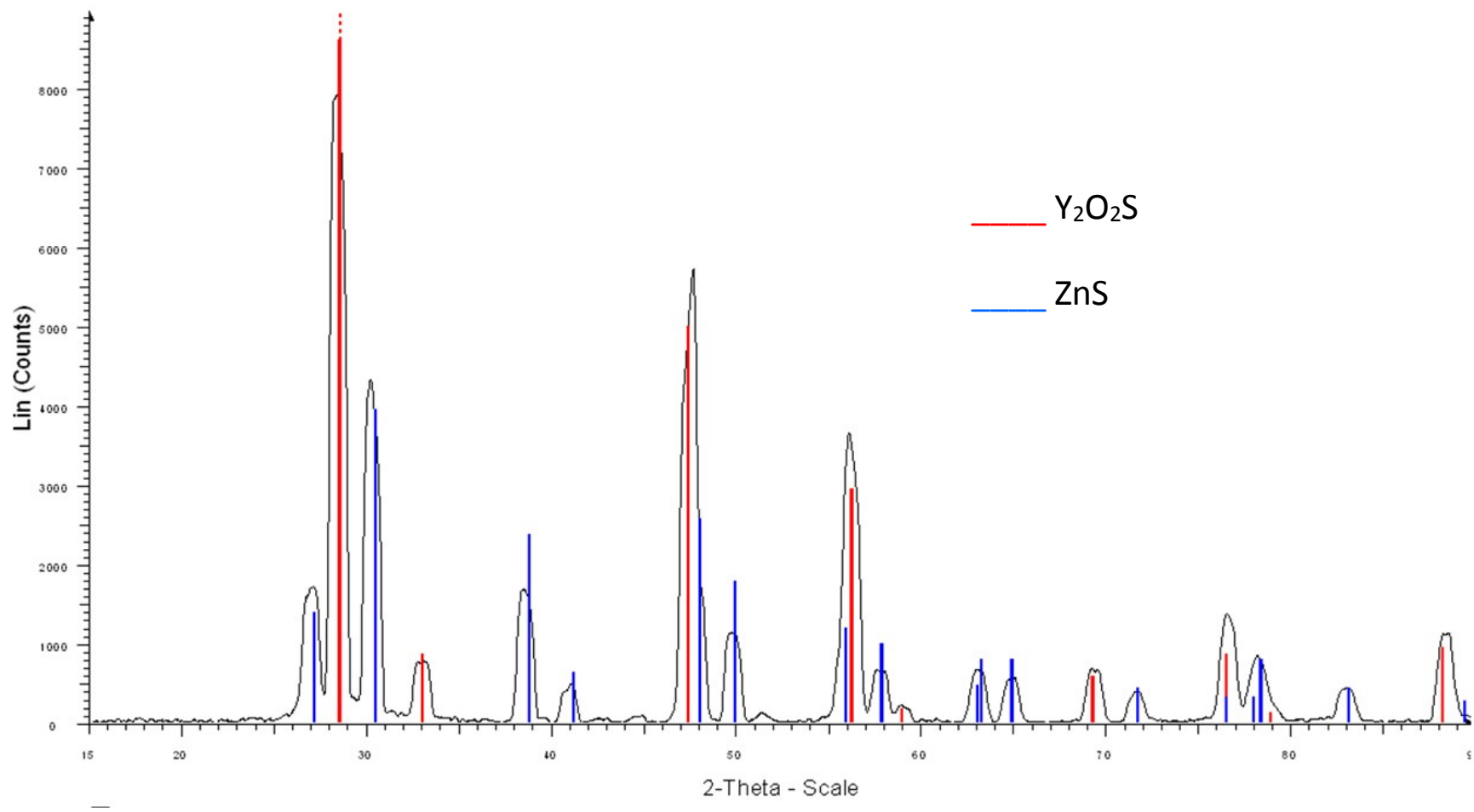


Fig. S1 XRD trace of the CRT phosphor powder (prior to sieving).

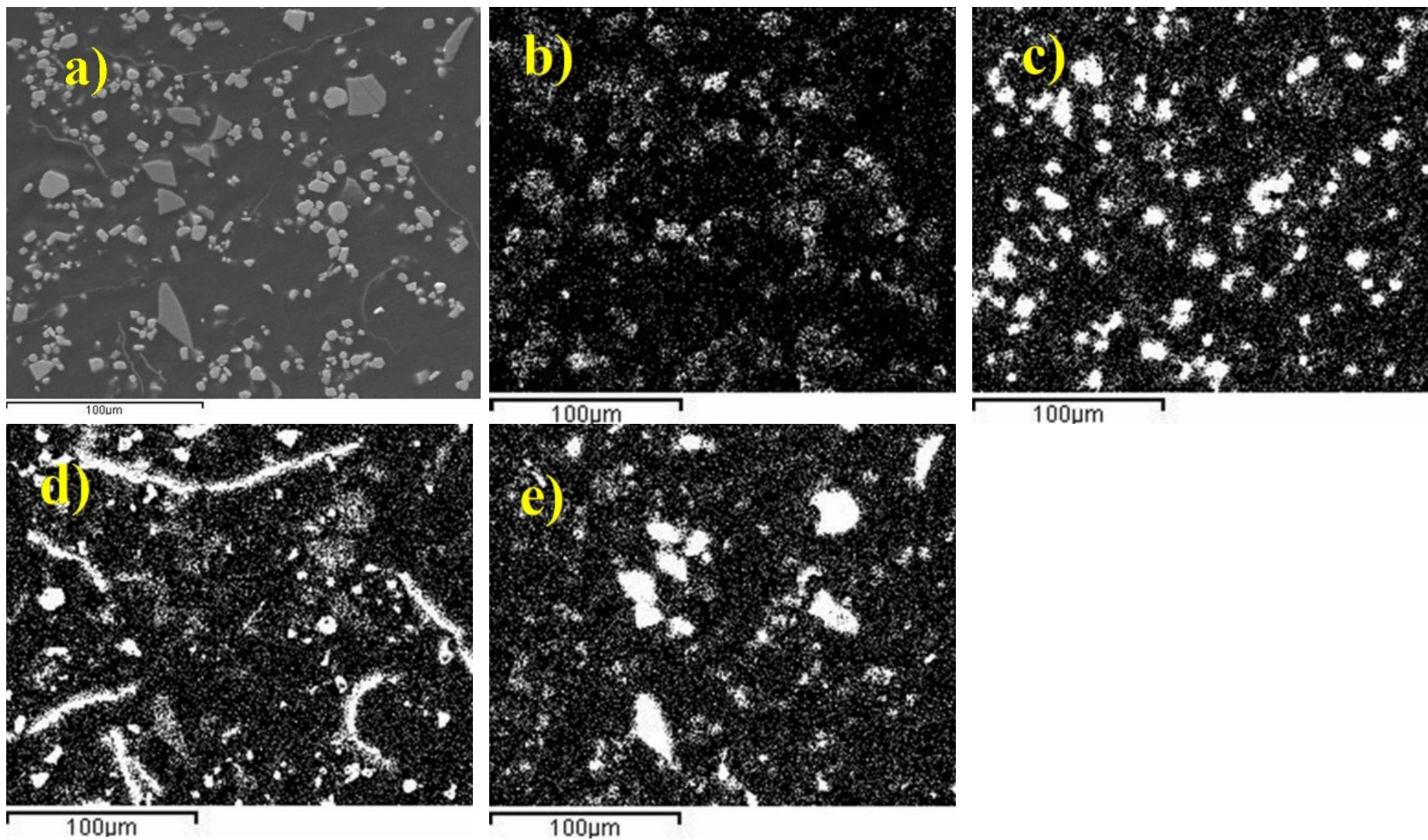


Fig. S2 Micrographs of the a) CRT phosphor powder (500× magnification) and distribution of the most relevant elements: b) zinc; c) yttrium; d) aluminum, and e) silicon.

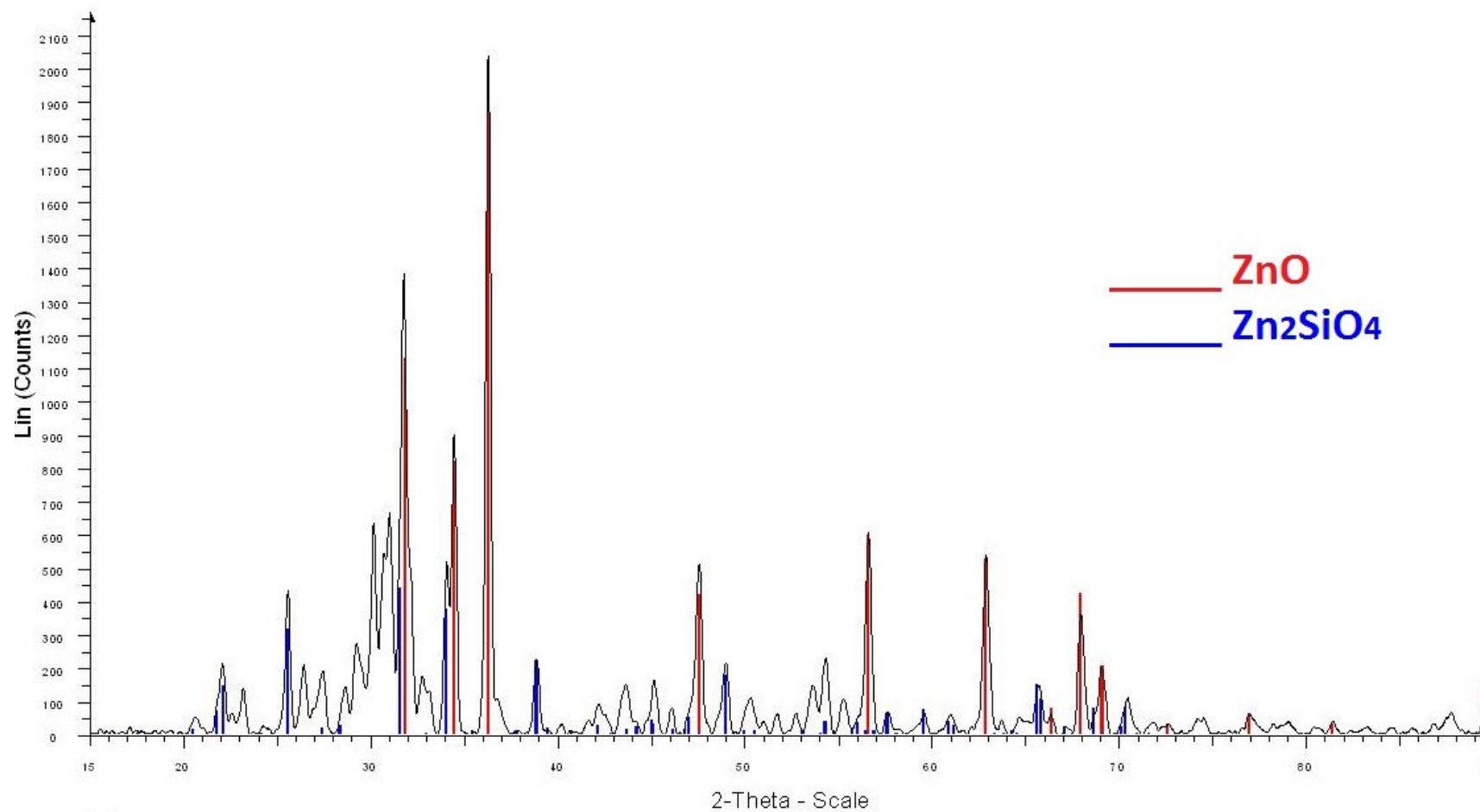


Fig. S3 XRD trace of the CRT phosphor powder (fraction <425 μm) roasted at 850 °C for 10.75 minutes.

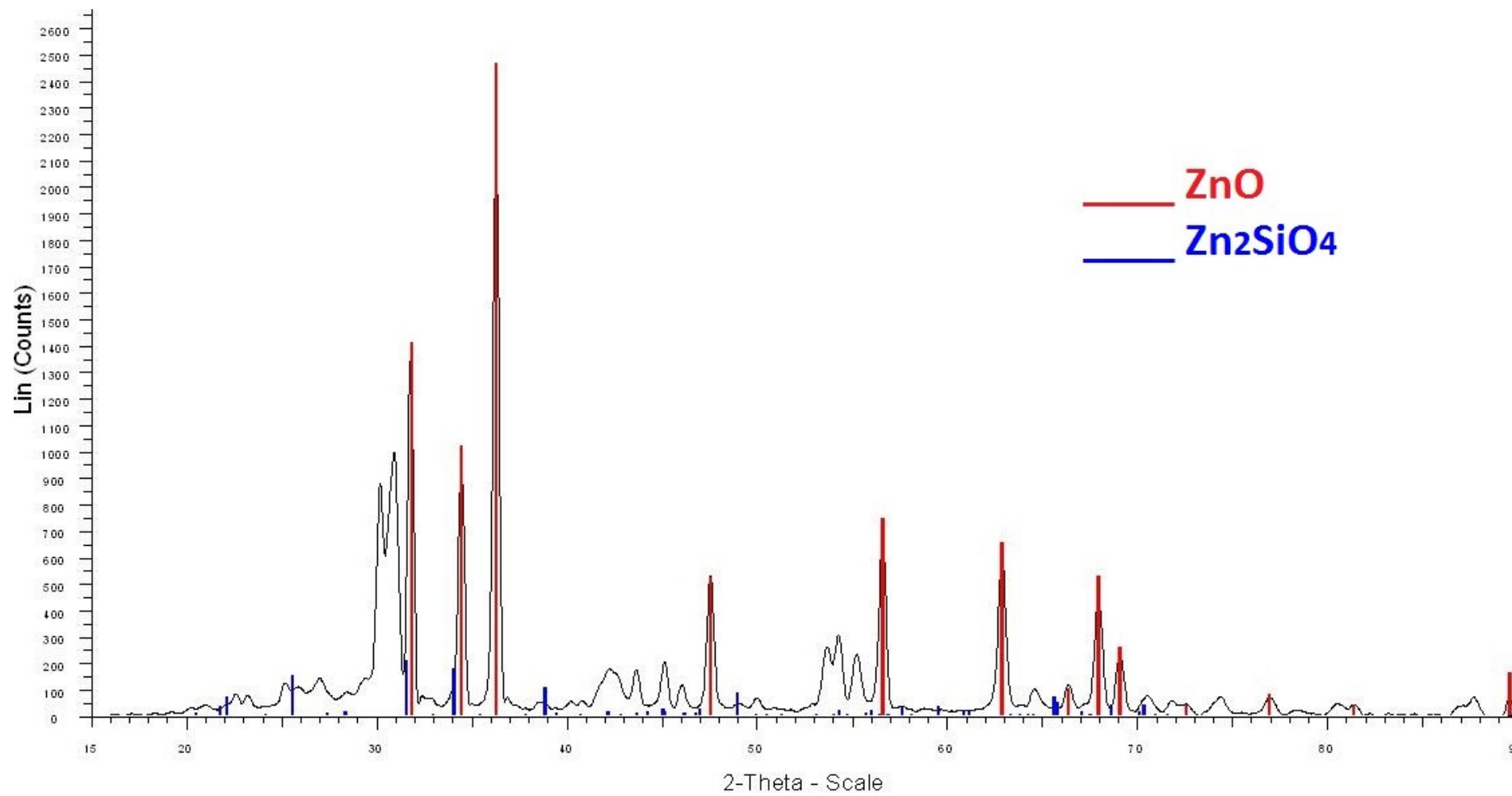


Fig. S4 XRD trace of the CRT phosphor powder (fraction <425 μm) roasted at 1000 °C for 10.25 minutes.

Table S1 Zinc leaching efficiency as a function of the roasting time (leaching conditions: [AcOH] = 14 mol L⁻¹, T = 25 °C, t = 24 h, LS = 10 mL g⁻¹).

Roasting time, h	Zn leaching efficiency, %
1	47
7	26
24	20

Table S2 Zinc leaching efficiency as a function of temperature (sample roasted for 1 h; leaching conditions: [AcOH] = 14 mol L⁻¹, t = 2 h, L/S = 10 mL g⁻¹).

T, °C	Zn leaching efficiency, %
25	46
50	47
75	47

Table S3 Zinc leaching efficiency as a function of liquid-to-solid ratio (sample roasted for 1 h; leaching conditions: [AcOH] = 14 mol L⁻¹, T = 25 °C, t = 2 h).

L/S, mL g ⁻¹	Zn leaching efficiency, %
10	46
15	45
20	45

Table S4 Zinc leaching efficiency as a function of time (sample roasted for 1 h; leaching conditions: [AcOH] = 14 mol L⁻¹, T = 25 °C, t = 2 h).

Time, h	Zn leaching efficiency, %
1	46
24	47

Table S5 Zinc leaching efficiency as a function of AcOH concentration (sample roasted for 1 h; leaching conditions: T = 25 °C, t = 2 h, L/S = 10 mL g⁻¹).

[AcOH], mol L ⁻¹	Zn leaching efficiency, %
2	55
10	57
14	47