1. The effect of the Erbium ions content in lattice parameters *a* and *c*, the ratio *c/a*, average crystallite size and dislocation density.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Er content (at.%) | Lattice parameter value (Å) | | c/a | Average crystallite size (nm) | Dislocation density  (1015 m-2) |
|  | a ± 5% | c ± 5% |  |  |  |
| 0 | 3.265 | 5.232 | 1.603 | 14.81 | 4.56 |
| 1 | 3.256 | 5.227 | 1.605 | 8.80 | 13.21 |
| 5 | 3.253 | 5.223 | 1.609 | 6.31 | 23.12 |
| 10 | 3.264 | 5.235 | 1.605 | 10.54 | 8.99 |

1. The variation of the Zn-O bond length, distortion (R) and cell volume as erbium ions content increase.

|  |  |  |  |
| --- | --- | --- | --- |
| Er content (at.%) | Bond length  (Zn-O) Å | *R* | Volume (V) (Å)3 ±5 % |
|  |  |  |  |
| 0 | 1.935 | 1.018 | 48.29 |
| 1 | 1.929 | 1.017 | 47.98 |
| 5 | 1.928 | 1.015 | 47.95 |
| 10 | 1.934 | 1.017 | 48.34 |