**Result and Discussion**

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| --- | --- | --- | --- | --- |
| Parameters | Sample | | | |
| Pure ZnO | 1% YZO | 3% YZO | 5% YZO |
| D (nm) | 18.822 | 12.319 | 18.338 | 13.764 |
| a (Å) | 3.342 | 3.871 | 3.273 | 3.234 |
| c (Å) | 5.273 | 5.323 | 5.242 | 5.223 |
| c/a | 1.577 | 1.374 | 1.602 | 1.616 |
| d002 (Å) | 2.55 | 6.7 | 2.56 | 2.51 |
| V (Å3) | 51.033 | 69.077 | 48.632 | 47.307 |
| Density (g/cm3) | 5.295 | 3.912 | 5.556 | 5.712 |
| Dislocation density \* 105 lines/m2 | 2.82 | 6.59 | 2.97 | 5.28 |
| Strain (ɛ) \*10-3 | 3.874 | 4.472 | 3.931 | 4.375 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **hkl** | **2θ** | | | | |
| **ZnO Wurtzite Structure** | **Pure ZnO** | **1% YZO** | **3% YZO** | **5% YZO** |
| (002) | 34.228 |  | 34.327 | 34.411 | 34.536 |
| (100) | 31.749 | 32.138 |  | 30.248 | 31.889 |
| (101) | 36.257 | 35.903 | 36.427 |  | 36.384 |
| (102) | 47.257 |  | 48.348 |  |  |
| (110) | 56.535 |  |  | 56.841 |  |
| (200) | 63.341 | 63.846 |  |  |  |