

## Comparison of Oxide Scintillation Crystals with NaI:Tl

|                                            | NaI:Tl | GSO   | GSOZ  | LGSO | Fast-LGSO | GPS  |
|--------------------------------------------|--------|-------|-------|------|-----------|------|
| Density (g/cm <sup>3</sup> )               | 3.67   | 6.71  | 6.71  | 7.3  | 7.3       | 5.5  |
| Effective atomic number $Z_{\text{eff}}$   | 50     | 58    | 58    | 63   | 63        | ~56  |
| Absorption coefficient at 511 keV          | 0.35   | 0.7   | 0.7   | 0.85 | 0.85      | ~0.6 |
| Peak wavelength $\lambda_{\text{em}}$ (nm) | 415    | 430   | 430   | 410  | 410       | ~380 |
| Refractive index at $\lambda_{\text{em}}$  | 1.85   | 1.85  | 1.85  | 1.83 | 1.83      | ~1.8 |
| Light output (arb. Unit)                   | 100    | 20    | 24    | ~90  | 70~80     | ~140 |
| Decay time (ns)                            | 230    | 30~70 | 40~60 | 41   | 30~36     | ~150 |
| Energy resolution (% at 662keV)            | 7      | 9     | 9     | ~8   | ~8        | ~6   |
| Hygroscopicity                             | Yes    | No    | No    | No   | No        | No   |
| Self-radiation                             | No     | No    | No    | Yes  | Yes       | No   |
| Melting point (°C)                         | 651    | 1950  | 1950  | 2100 | 2100      | 1800 |