Manufacturing and research Cu2ZnSnS4 thin-film multilayer structures (2012-2019 рр.).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Code |  | P | S | h | t | Striped substrates | | XRD, Madrid | S-ellips,  Madrid | s,p,a-R,  Madrid | n-R,  Madrid | ERM, Kyiv | EDX, Madrid | Raman, Kyiv | µ-Raman, Kyiv | n-R, Kyiv |
|  | mbr | mg | C/min | min | Mo | Au |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| bs1 | A31 | 950 | 50 | 20 | 30 |  |  |  |  |  |  |  | + | + |  |  |
| bs2 | A32 | 440 | 50 |  |  |  |  |  |  |  |  |  | + | + |  |  |
| bs3 | A33 | 50 | 50 |  |  |  |  |  |  |  |  |  | + | + |  |  |
| bs4 | A34 | 950 | 30 |  |  |  |  |  |  |  |  |  | + |  |  |  |
| bs5 | A35 | 950 | 30 | 5 |  |  |  |  |  |  |  |  | + |  |  |  |
| bs6 | A36 | 50 | 100 |  |  |  |  |  |  |  |  |  | + | + |  |  |
| bs7 | A37 | 50 | 100 |  | 45 |  |  |  |  |  |  |  | + |  |  |  |
| bs8 | A38 | 50 | 100 |  |  |  |  |  |  |  |  | + | + |  | + | + |
| bs9 | A39 | 440 | 50 |  |  |  |  |  |  |  |  | + | + |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| bs10 | M41 | 950 | 50 |  |  |  |  |  |  |  |  |  | + | + |  |  |
| bs11 | M42 | 440 | 50 |  |  |  |  |  |  |  |  |  | + | + |  |  |
| bs12 | M43 | 50 | 50 |  |  |  |  |  |  |  |  |  | + | + |  |  |
| bs13 | M44 | 950 | 30 |  |  |  |  |  |  |  |  |  | + |  |  |  |
| bs14 | M45 | 950 | 30 | 5 |  |  |  |  |  |  |  |  | + |  |  |  |
| bs15 | M46 | 50 | 100 |  |  |  |  |  |  |  |  |  | + | + |  |  |
| bs16 | M47 | 50 | 100 |  | 45 |  |  |  |  |  |  |  | + |  |  |  |
| bs17 | M48 | 50 | 100 |  |  |  |  |  |  |  |  |  | + |  |  |  |
| bs18 | M49 | 440 | 50 |  |  |  |  |  |  |  |  |  | + |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| bs19 | A310 | 50 |  |  |  |  |  |  |  |  | + |  | + |  |  |  |
| bs20 | A311 | 950 | 50 | 20 | 30 |  |  | + | + | + | + |  | + |  | + |  |
| bs21 | A312 | 460 | 50 |  |  |  |  | + | + | + | + |  | + |  | + |  |
| bs22 | A313 | 50 | 50 |  |  |  |  | + |  |  | + |  | + |  | + |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| bs23 | M410 | 50 |  |  |  |  |  | У |  | Миколи | + | від | + | 27.11 | 2018 |  |
| bs24 | M411 | 950 |  |  |  |  |  |  |  |  | + |  | + |  |  |  |
| bs25 | M412 | 460 |  |  |  |  |  |  |  |  | + |  | + |  |  |  |
| bs26 | M413 | 50 |  |  |  |  |  | + |  |  | + |  | + |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| bs27 | IB-1 |  |  |  |  |  |  |  |  |  |  |  | + |  |  |  |
| bs28 | IB-2 | 50 |  |  |  | + | + | + | + |  |  |  | + |  | + |  |
| bs29 | IB-3 |  |  |  |  | + | + | + | + |  |  |  | + |  | + |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| bs30 | IIB-1 |  |  |  |  |  |  |  |  |  |  |  | + |  |  | + |
| bs31 | IIB-2 | 50 |  |  |  | + | + | + | + |  |  |  | + |  | + | + |
| bs32 | IIB-3 |  |  |  |  | + | + | + | + |  |  |  | + |  | + |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| bs33 | MR3-4  (2sample) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| bs34 | MR3-4  6628 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| bs35 | MRI3-4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| bs36 | MRI3-4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| bs37 | Bulk Viktorov | Bridgman |  |  |  |  |  |  |  |  |  |  | + | +- | + |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |