

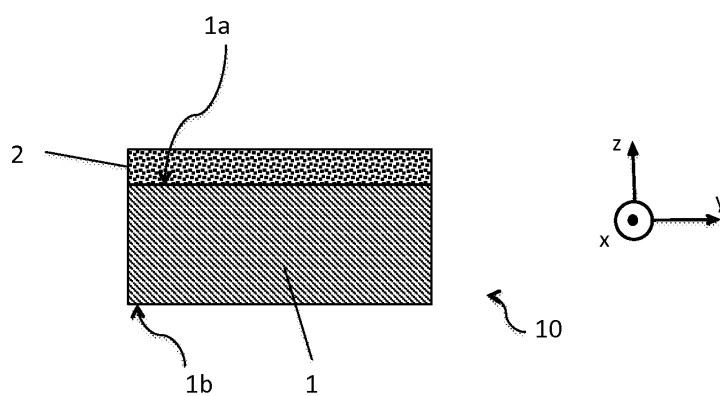


FIG.1a

| Matériau                                                      | Coefficient de dilatation thermique (x1E-6) (/K) | Resistivité (ohm.cm) | Permittivité | Module d'Young (GPa) |
|---------------------------------------------------------------|--------------------------------------------------|----------------------|--------------|----------------------|
| SiO <sub>2</sub>                                              | 0,56                                             | 1,00E+17             | 3,9          | 66                   |
| Si <sub>3</sub> N <sub>4</sub>                                | 1.4~3.7 / 3.2                                    | 1e10 - 1e15          | 9.5-10.5     | 160-310              |
| Al <sub>2</sub> O <sub>3</sub>                                | 8.1 - 8.4 / 6 - 7                                | >1E14                | 9,8          | 300-375              |
| mullite (3Al <sub>2</sub> O <sub>3</sub> .2SiO <sub>2</sub> ) | 5,4                                              | >1E13                | 5,8          | 151                  |
| AlN                                                           | 4.3~5.6                                          | 1,00E+14             | 9            | 330                  |

TAB.1

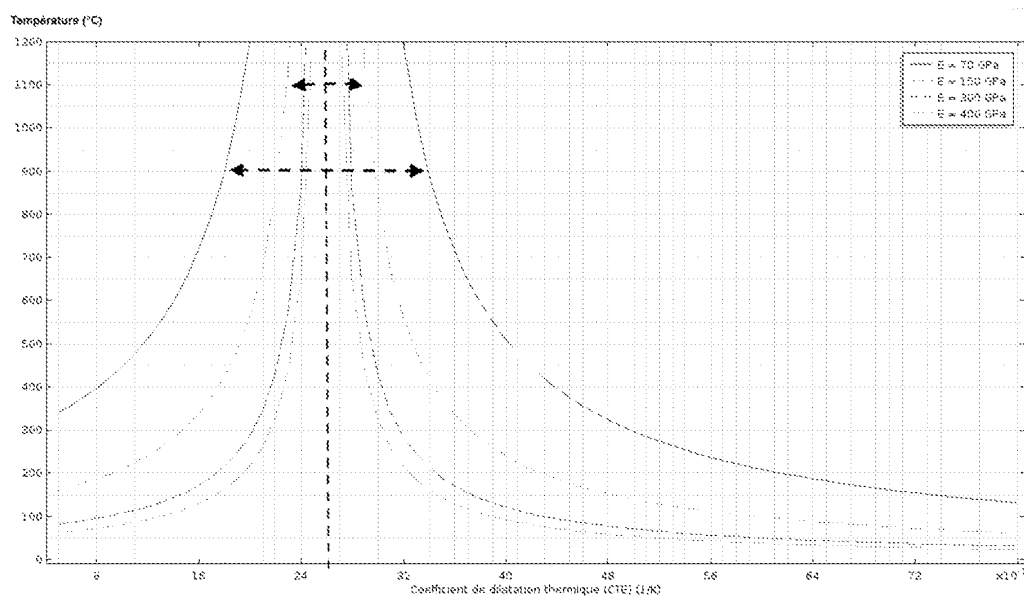


FIG.1b

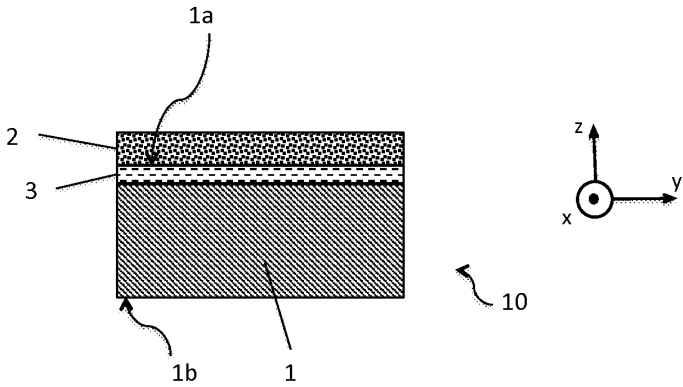


FIG.2a

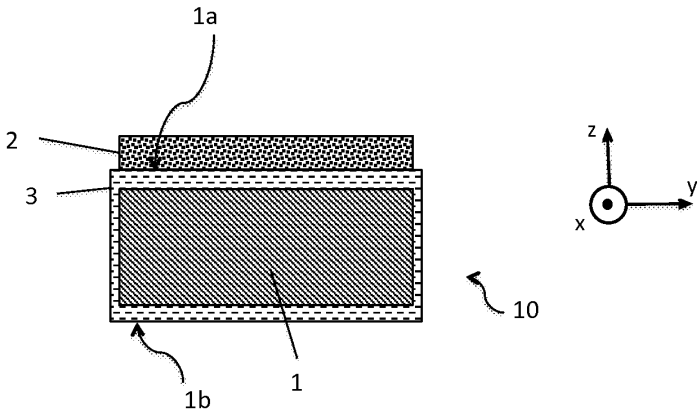


FIG.2b

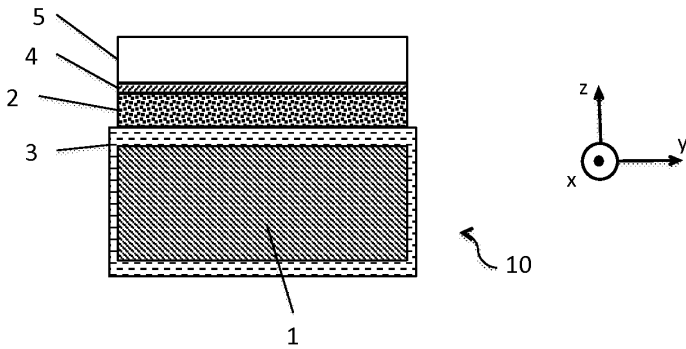


FIG.3a

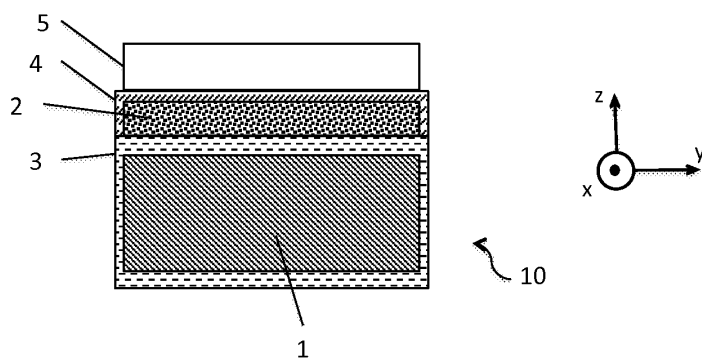


FIG. 3b

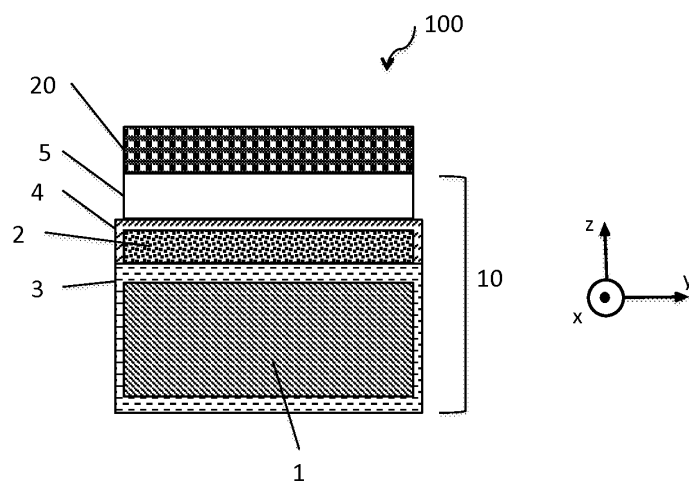


FIG. 4

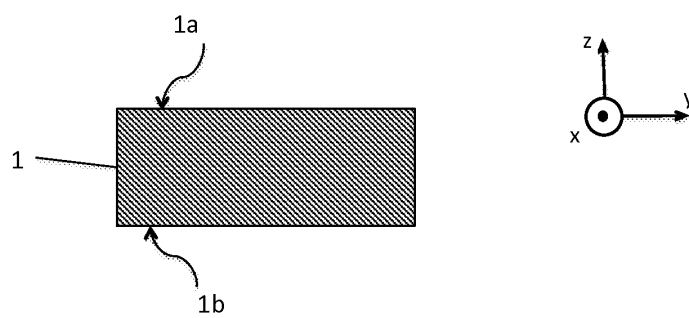


FIG. 5a

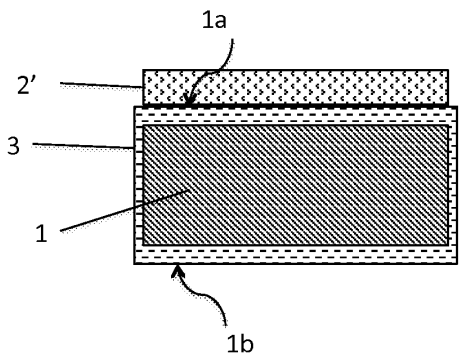


FIG.5b

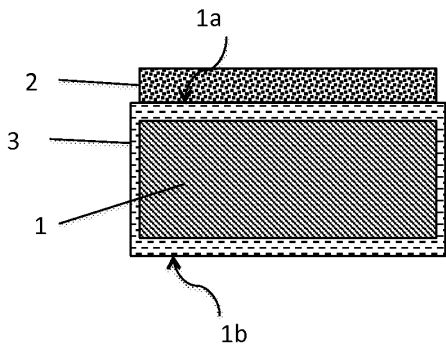


FIG.5c

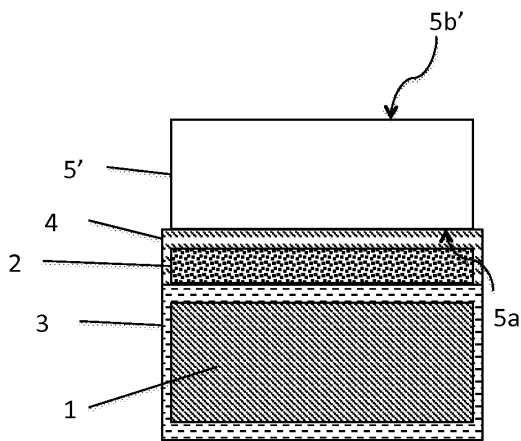


FIG.5d

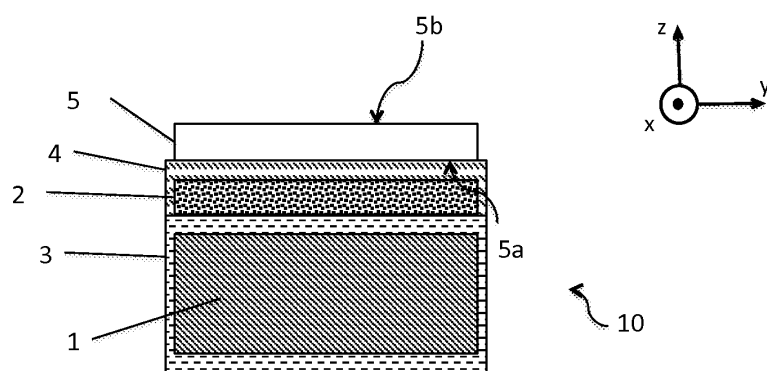


FIG.5e