CLAIMS

1. Method for manufacturing a stack (1) comprising the following step:
   - Providing at least an initial stack comprising:
     i. a baseplate substrate (100') with the basis of a base material having a thermal dilatation coefficient called base thermal dilatation coefficient α, the baseplate substrate (100') having an upper face (101') and a lower face (102') both extending mainly in a plane XY,
     ii. a first insulating layer (130') surmounting the upper face (101') of the baseplate substrate (100'), the first insulating layer (130') being with the basis of a first insulating material, the first insulating material having a first thermal conductivity λ_1 and a first thermal dilatation coefficient α_1, the first insulating layer (130') comprising an array (150') of trenches (120'),

characterized in that the method also comprises at least the following steps:

- Filling the trenches (120') by a second insulating material having a second thermal conductivity λ_2 and a second thermal dilatation coefficient α_2, thus forming a second insulating layer (200), the second thermal conductivity λ_2 being different from the first thermal conductivity λ_1, α_1 and α_2 being greater than 0.3ppm/K, and
- Forming a semiconductive film (400') above the second insulating layer (200).

2. Method for manufacturing a stack (1) according to the preceding claim, wherein $0 \leq 2*|(\alpha_2-\alpha_1)|/(\alpha_2+\alpha_1) \leq 1.8$ and $0 \leq |(\alpha-\alpha_1)|/\alpha \leq 2.1$.

3. Method for manufacturing a stack (1) according to any one of the preceding claims, wherein $k_1 \leq |(\lambda_2-\lambda_1)/\lambda_1|$, with $0.3 \leq k_1$.

4. Method for manufacturing a stack (1) according to any one of the preceding claims, wherein the second thermal conductivity λ_2 is strictly greater than the first thermal conductivity λ_1.

5. Method for manufacturing a stack (1) according to any one of the preceding claims, wherein one from among the first thermal dilatation coefficient α_1 and the second thermal dilatation coefficient α_2 is greater than α and the other from among the first thermal dilatation coefficient α_1 and the second thermal dilatation coefficient α_2 is less than α.

6. Method for manufacturing a stack (1) according to any one of the preceding claims, wherein the first insulating material has a first Young's modulus E_1 and the second

insulating material has a second Young's modulus E_2, with $E_1 \neq E_2$, E_1 and E_2 being greater than 50GPa.

7. Method for manufacturing a stack (1) according to any one of the preceding claims, wherein the step of providing the initial stack comprises the following steps:

- Providing at least one initial substrate (100) with the basis of the base material and having an upper face (101),
- Forming in the initial substrate (100) and from the upper face (101), an initial array (150) of initial trenches (120),
- Transforming at least the base material on at least one portion of the initial substrate (100) into the first insulating material, thus forming the first insulating layer (130').

8. Method for manufacturing a stack (1) according to the preceding claim, wherein transforming at least the base material on at least one portion of the initial substrate (100) comprises an oxidation of the base material separating the initial trenches (120) from one another.

9. Method for manufacturing a stack (1) according to any one of claims 1 to 6, wherein the step of providing the initial stack comprises the following steps:

- Providing the baseplate substrate (100'),
- Forming a first initial insulating layer (130) surmounting the baseplate substrate (100'), the first initial insulating layer (130) being with the basis of the first insulating material,
- After the step of forming a first initial insulating layer (130), forming in the first initial insulating layer (130), the array (150') of trenches (120'), thus forming the first insulating layer (130').

10. Method for manufacturing a stack (1) according to any one of the preceding claims, further comprising, before the step of forming the semiconductive film, a step of forming a continuous layer (250) with the basis of the second insulating material directly covering the second insulating layer (200).

11. Method for manufacturing a stack (1) according to any one of the preceding claims, further comprising a step of forming a third insulating layer (300) with the basis of a third insulating material distinct from the second insulating material, under the semiconductive film (400').

12. Method for manufacturing a stack (1) according to any one of the preceding claims, wherein the first insulating material remaining between consecutive trenches forms

a wall (110'), each wall (110') has a wall width l_m' and the trenches (120') have a trench width l_t', wherein the ratio l_t'/l_m' is between 0.3 and 3.

13. Method for manufacturing a stack (1) according to any one of the preceding claims, wherein the trenches (120') have a depth e_t', with e_t' between 5µm and 20µm.

14. Method for manufacturing a stack (1) according to any one of the preceding claims, wherein the second insulating material is made of or is of the basis of one from among Al_2O_3, AlN, SiC, Si_3N_4, BeO, a silicon oxynitride and BN.

15. Method for manufacturing a stack (1) according to any one of the preceding claims, wherein the first insulating layer is fully constituted of the first insulating material.

16. Method for manufacturing a stack (1) according to any one of the preceding claims, wherein the first insulating material and the second insulating material are each distinct from the base material.

17. Microelectronic device comprising a stack (1) of layers comprising:

- a baseplate substrate (100') having an upper face (101') and a lower face (102') both extending mainly in a plane XY,
- a buried insulating layer (1000) comprising:
    - a first insulating layer (130') with the basis of a first insulating material and comprising a plurality of walls (110'), the first insulating material having a first thermal conductivity λ1 and a first thermal dilatation coefficient α1, the first insulating layer (130') surmounting the upper face (101') of the baseplate substrate (100'),
    - a second insulating layer (200) with the basis of a second insulating material and extending at least into the trenches (120') separating the walls (110'), the second insulating material having a second thermal conductivity λ2 and a second thermal dilatation coefficient α2, the second thermal conductivity λ2 being different from the first thermal conductivity λ1, α1 and α2 being greater than 0.3ppm/K,
- a semiconductive film (400').