Claims

1. Process for the production of a permanent, electrically conductive connection between a first metal surface of a first substrate and a second metal surface of a second substrate with the following method steps:

- ~~Conditioning of the first and second metal surfaces in such a way that in a connection of the metal surfaces a permanent, electrically conductive connection - produced at least primarily by surface diffusion and/or grain boundary diffusion of metallic ions between similar metal ions and/or metal atoms of the two metal surfaces - is produced,~~
- conditioning the first and second metal surfaces by grain boundary diffusion of metallic ions between similar metal ions and/or metal atoms of the two metal surfaces to produce the permanent, electrically conductive connection of the metal surfaces,
- alignment and bonding of the first and second metal surfaces, whereby during the conditioning, alignment and bonding, a process temperature of at most 300°C is not exceeded.

2. Method according to Claim 1, wherein the first and/or second metal surface(s) has (have) a layer thickness $S < 5$ nm, in particular $S < 3$ nm, preferably $S < 2$ nm, even more preferably $S < 1$ nm, and especially preferably $S < 0.5$ nm.

3. Method according to one of the preceding claims, wherein additionally hydrogen is implanted during conditioning of the first and second metal surfaces.

4. Method according to one of the preceding claims, wherein the conditioning comprises the optimization of the surface roughness of at least one of the metal surfaces.

5. Method according to one of the preceding claims, wherein the first substrate comprises a metallic region surrounding the metal surface and/or the second substrate comprises a metallic region surrounding the metal surface.