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(54) Title: THERMAL INTERCONNECT SYSTEMS METHODS OF PRODUCTION AND USES THEREOF

(57) Abstract: Layered interface materials described herein include at least one pulse-plated thermally conductive material, such as an interconnect material, and at least one heat spreader component coupled to the at least one pulse-plated thermally conductive material. A plated layered interface material having a migration component is also described herein and includes at least one pulse-plated thermally conductive material; and at least one heat spreader component, wherein the migration component of the plated layered interface material is reduced by at least 51% as compared to the migration component of a reference layered interface material. Another layered interface material described herein includes: a) a thermal conductor; b) a protective layer; c) a layer of material to accept solder and prevent the formation of oxides; and d) a layer of solder material. Methods of forming layered interface materials are described herein that include: a) providing a pulse-plated thermally conductive interface material; b) providing a heat spreader component; and c) physically coupling the thermally conductive interface material and the heat spreader component. At least one additional layer, including a substrate layer, a surface, an adhesive, a compliant fibrous component or any other suitable layer or a thermal interface material, can be coupled to the layered interface material.