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(71) Applicants and

(72) Inventors: **CORBIN, Stephen, F.** [CA/CA]; 17 Bismark Ave., Kitchener, Ontario N2H 5S6 (CA). **MCISAAC, Douglas, J.** [CA/CA]; 705-400 Parkside Dr., Waterloo, Ontario N2L 6E5 (CA). **QIAO, Xin** [CN/CA]; Apartment 159, 3769 Gekeler LN, Boise, ID 83706 (CA).

(74) Agent: **HILL & SCHUMACHER**; 87 Falcon Street, Toronto, Ontario M4S 2P4 (CA).

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(54) Title: VARIABLE MELTING POINT SOLDERS AND BRAZES

(57) Abstract: Variable melting point solders and brazes having compositions comprising a metal or metal alloy powder having a low melting point with a metal powder having a higher melting point. Upon heating, *in-situ* alloying occurs between the low and high melting point powders such that solidification occurs at the solder or braze temperature thus creating a new, higher solidus (or melting) temperature with little or no intermetallic formation. A solder comprising Sn powder mixed with a Sn-Bi eutectic powder having a composition of 63wt.% Sn: 57wt.% Bi such that the bulk composition of the mixture is 3 wt.% Bi has an initial melting point of 140 °C and a re-melt temperature of 220 °C after heating due to in-situ alloying. A composition of Pb powder mixed with a Pb-Sn eutectic powder having a composition of 62wt.% Sn:58wt.% Pb such that the bulk composition of the mixture is 15 wt.% Sn has an initial melting point of 183 °C and a re-melt temperature of 250 °C.

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