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(71) Applicant: ECO-SNOW SYSTEMS, INC. [US/US], 4935 A Southfront Road, Livermore, CA 94550 (US).

(72) Inventor: BOWERS, Charles, W.; 1632 Scenic Avenue, Livermore, CA 94550 (US).

(74) Agents: PEDERSEN, Ken, J. et al.; Pedersen and Company, PLLC, 1410 North 28th Street, Boise, ID 83703 (US).

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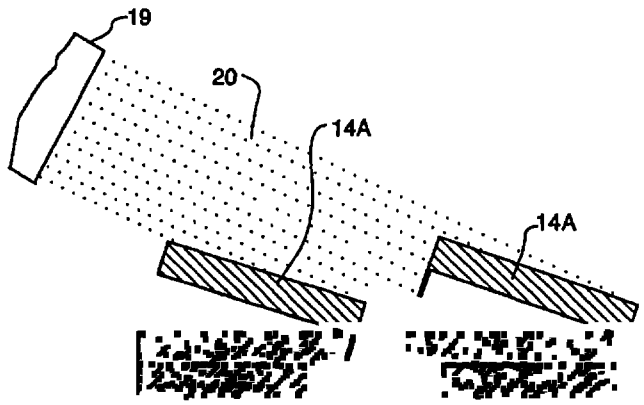
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(54) Title: METHOD FOR SELECTIVE METAL FILM LAYER REMOVAL USING CARBON DIOXIDE JET SPRAY

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(57) Abstract: A method for the selective removal of the metal film layer (14) accumulated upon a photoresist layer (10) during processing of substrates using a stream of carbon dioxide spray (20) without disturbing conductor portions is provided. A constant stream (20) of high pressure $CO_2$ snow is applied to the metal film layer thereby rapidly cooling the metal layer on top of said resist layer causing it to shrink rapidly, and to debond, and peel from the photoresist layer underneath. The temperature of the substrate is raised and maintained at significantly higher than room temperature. Continuing the application of the $CO_2$ spray causes thermal shock to the photoresist under the metalized layer causing large cracks in the remaining metal layer portions, said cracks typically including at least one loose metal edge. The $CO_2$ spray is continually applied to the cracks thereby peeling away the remaining metal portions, leaving the exposed photoresist and underlying surface features. Preferably, continued treatment of the surface with $CO_2$ snow particals erodes a surface layer of the photoresist and heavily cross-linked layers created during the metalization process. After the metal layer and the surface layer of the photoresist are removed, a simple chemical strip, such as acetone, completely removes all the remaining resist, leaving the wafer with undamaged conductor portions.

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