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Lam

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(54) **WAFER-LEVEL OPTOELECTRONIC PACKAGING**

(71) Applicant: **POET TECHNOLOGIES, INC.**, San Jose, CA (US)

(72) Inventor: **Yee Loy Lam**, Singapore (SG)

(73) Assignee: **POET Technologies, Inc.**, San Jose, CA (US)

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See application file for complete search history.

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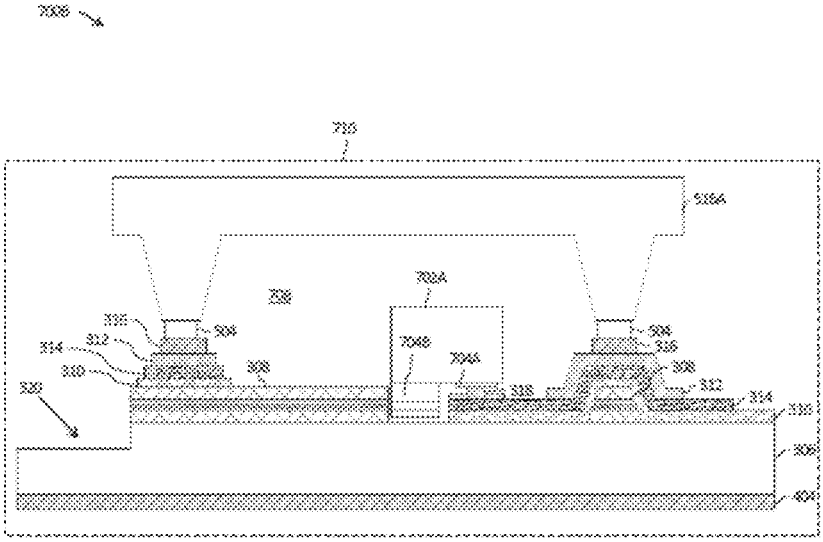
Primary Examiner — Kaveh C Kianni
Assistant Examiner — Hung Q Lam
(74) *Attorney, Agent, or Firm* — Tue Nguyen

(57) **ABSTRACT**

A wafer-level optoelectronic packaging method includes fabricating a pre-singulated wafer. The pre-singulated wafer has a plurality of sub-mounts. A first sub-mount of the plurality of sub-mounts includes an optical waveguide formed on a substrate, a multi-layered sub-mount boundary wall that is formed on the optical waveguide, and a v-groove that is external to the sub-mount boundary wall. A plurality of optical dies are attached to the corresponding plurality of sub-mounts, such that each optical die is aligned to the optical waveguide of the corresponding sub-mount. A cap-wafer including a plurality of caps is attached to the pre-singulated wafer to obtain an encapsulated pre-singulated wafer. The encapsulated pre-singulated wafer is diced to obtain a plurality of optoelectronic packages. The optical waveguide of each optoelectronic package serves as an interconnection conduit between the corresponding optical die and an optical fiber placed in the corresponding v-groove.

8 Claims, 19 Drawing Sheets