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(71) Applicant: **APPLIED MATERIALS, INC.** [US/US];
3050 Bowers Avenue, Santa Clara, California 95054 (US).

(72) Inventors: **RANGASAMY, Ezhilmurugan**; c/o Applied
Materials, Inc., Law Dept., M/S 1269, 3050 Bowers Avenue,
Santa Clara, California 95054 (US). **HERLE, Subra-
manya P.**; c/o Applied Materials, Inc., Law Dept., M/S
1269, 3050 Bowers Avenue, Santa Clara, California 95054
(US).

(74) Agent: **VER STEEG, Steven H.** et al.; PATTERSON +
SHERIDAN LLP, 24 Greenway Plaza, Suite 1600, Hous-
ton, Texas 77046 (US).

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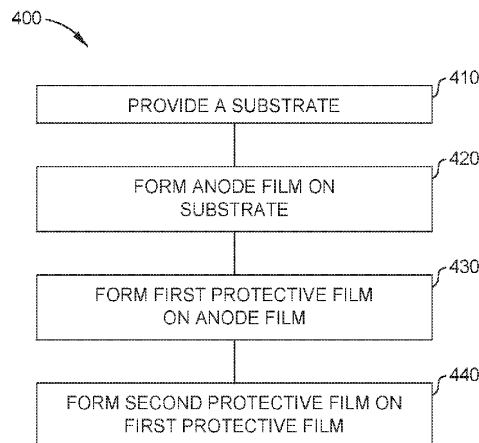


FIG. 4

(57) Abstract: Interfacial films, which are both electronic conducting and ion conducting, for anode films are provided. The one or more protective films described herein may be mixed conduction materials, which are both electronic conducting and ion-conducting. The one or more protective films described herein may include materials selected from lithium transition metal dichalcogenides, $\text{Li}_9\text{Ti}_5\text{O}_{12}$, or a combination thereof. The lithium transition metal dichalcogenide includes a transition metal dichalcogenide having the formula MX_2 , wherein M is selected from Ti, Mo, or W and X is selected from S, Se, or Te. The transition metal dichalcogenide may be selected from TiS_2 , MoS_2 , WS_2 , or a combination thereof. The lithium transition metal dichalcogenide may be selected from lithium-titanium-disulfide (e.g., LiTiS_2), lithium-tungsten-disulfide (e.g., LiWS_2), lithium-molybdenum-disulfide (e.g., LiMoS_2), or a combination thereof.

[Continued on next page]

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