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(54) **SUB-STOICHIOMETRIC, CHALCOGEN-CONTAINING-GERMANIUM, TIN, OR LEAD ANODES FOR LITHIUM OR SODIUM ION BATTERIES**

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CPC ***H01M 4/581*** (2013.01); ***H01B 1/02*** (2013.01); ***H01G 11/50*** (2013.01); ***H01M 4/405*** (2013.01);
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(58) **Field of Classification Search**
CPC H01M 4/136; H01M 4/581; H01M 4/58; H01M 10/05; H01M 10/0525;
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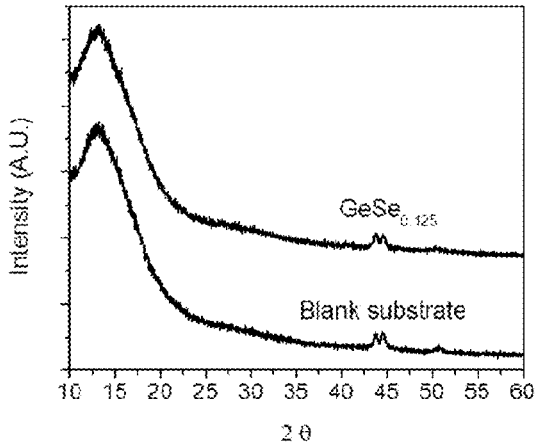
(57) **ABSTRACT**

The disclosure relates to an anode or an electrolytic capacitor electrode including an active anode material containing a chalcogen-containing-germanium composition in which the germanium:chalcogen atom ratio is between 80:20 and 98:2. The disclosure also relates to an anode including an active anode material containing a lithium and germanium-containing alloy wherein the lithium:germanium atom ratio is 22:5 or less. The anode also includes a non-cycling lithium chalcogenide. The disclosure further relates to lithium ion batteries including such anodes. The disclosure additionally relates to capacitor electrodes containing similar materials and capacitors containing such electrodes.

20 Claims, 11 Drawing Sheets
(7 of 11 Drawing Sheet(s) Filed in Color)