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(54) **PREPARATION OF LI AND NA FOILS WITH {110} OR {100} SURFACE TEXTURING**

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(57) **ABSTRACT**

A method of forming a lithium or sodium foil for use as an electrode involves imposing a surface texturing that is predominately the {110} or {100} crystallographic orientation. For a Li {110} foil, a raw foil with a thickness of about 600 μm is heated to about 90° C. to randomize the crystallographic orientation and the foil is rolled to about 300 μm upon cooling. The rolled film is then scraped of about 50 μm of the lithium surface and heated to about 75° C. and rolled a second time to about 200 μm, and again cooled to room temperature. The cooled foil can be shaped into the electrode. The electrode can be employed in a battery to greatly extend the life of the battery relative to a lithium battery with a lithium anode that lacks the surface texturing. The alkali metal can be lithium electrochemically deposited on 3D scaffold such as carbon cloth with the deposited alkali metal maintaining the {110} texture.