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(54) **THRESHOLD SWITCHING MATERIAL, THRESHOLD SWITCHING DEVICE AND PREPARATION METHOD THEREOF**

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(57) **ABSTRACT**

A threshold switching material, a threshold switching device and a preparation method thereof are disclosed. The chemical formula of the threshold switching material is  $M_xD_{1-x}$ , wherein M is one of La, Ce, Gd, Lu, Sc, Y, Zr, Mo, Hf, W, Ta, D is one of S, Se, Te, and  $0.1 \leq x \leq 0.8$ .

The diagram shows a cross-sectional view of a device structure. It consists of a substrate (1) on the left, a central layer (2) with a cross-hatched pattern, and a top layer (3) with a diagonal hatched pattern. A fourth layer (4) is shown on the right, with a diagonal hatched pattern. The central layer (2) is divided into two regions by a vertical boundary. The top layer (3) is also divided into two regions by a vertical boundary. The fourth layer (4) is a single continuous layer on the right side.