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(54) **PREPARATION METHOD AND  
PHOTOELECTRIC DEVICE OF TIN-BASED  
PEROVSKITE THIN FILM EMPLOYING  
STRESS CONTROL**

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(71) Applicant: **Huazhong University of Science and  
Technology, Wuhan, Hubei (CN)**

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(72) Inventors: **Mingkui WANG, Wuhan, Hubei (CN);**  
**Haixuan YU, Wuhan, Hubei (CN);**  
**Xiongjie LI, Wuhan, Hubei (CN);**  
**Zhiguo ZHANG, Wuhan, Hubei (CN)**

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(57) **ABSTRACT**

A tin-based perovskite thin film employing stress control, a preparation method therefor, and a photoelectric device are provided. The preparation method includes placing a tin-based perovskite solution film and a ligand solution in the same chamber, making a degree of vacuum of the chamber lower than 1,000 Pa by performing air pumping, and then stopping air pumping, wherein the ligand solution is a solution containing an amino or mercapto functional group; maintaining the chamber to be in a closed state, so that tin-based perovskite is complexed with a solvent to form a mesophase solid film with an ability to resist thermal stress impact, the ligand solution continues to be volatilized to fill the chamber to form a ligand atmosphere, and the ligand is combined with the uncoordinated tin ion in the mesophase solid film to reduce surface defects; and taking out the mesophase solid film and annealing.

