

A Study of Silicon Wafer with SRP Technique

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Silicon sensors are used for particle tracking in many high energy physics (HEP) experiments. Suranaree University of Technology (SUT), Thai Micro Electronic Center (TMEC) and A Large Ion Collider Experiment (ALICE) collaborate to develop a new sensor for the Inner Tracking System (ITS). In this project, the new sensor is requested to be 50 microns thick to reduce its material budget. To achieve the required specifications, ultrathin silicon wafers with 25 microns thickness and high resistivity are used. We measure the doping concentration and epitaxial layer depth using Spreading Resistance Profiling (SRP) and Scanning Electron Microscope (SEM). Our results show that it is possible to obtain high resistivity wafers up to $1.6 \text{ k}\Omega\cdot\text{cm}$ with an epitaxial layer of 25 microns to be used as starting materials for the new ALICE Pixel DEtector (ALPIDE) sensor.

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