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The implementation of photoinduced discharge X-ray detector using photoconductor

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This study shows each photoconductor properties of PhotoInduced Discharge X-ray detector. a-Se via former used TFT has many problems. These problems are row yields from TFT manufacture and image quality decrease from its noise. a-Se case especially, duration of manufacture and row yields and circuit damage from high voltage polarizing are significant problems. To overcome problems using a-Se, three types of material are used. Lead Oxide with low leakage current, Mercury Iodide with high sensitivity and mixture of Mercury Iodide are measured with 495~570nm and 620nm Laser. Upper and lower electrode evaporated with Indium thin Oxide by Magnetron Sputtering System are used as a board. Air gap with 100~500nm thickness is used as dielectric. Aluminum board is used at lower substrate. Materials are evaporated by screen printing Method. X-ray reference condition is 70Kvp, 100mA. To find out material properties and electronic properties, Scanning electron microscope, electrometer and oscilloscope are used. A number of materials via PID method has lower leakage current than former used materials. Lead Oxide case ,however, laser response property at 495~570nm and 620nm dose not exist. And Mixture Mercury Iodide case, laser response property at only 495~570nm exists. only Mercury Iodide has outstanding laser property at both lasers. Though manufactured material from PID method has lower leakage properties than former materials, sensitivity was lower than former materials.

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