



## Height Selective Circuit Isolation on Multilayer Integrated Circuits

Conventional laser marking systems do not allow for height selective circuit isolation with ease through optically transparent layers. Additionally, it is not possible to view the laser marking or cutting process through the microscope in real time. The Micropoint laser system allows the operator to view through the microscope eyepieces and isolate very thin layers of the circuit without damaging adjacent layers. The images to the right and below (clockwise) show a complex circuit where three individual circuits were isolated. The operator simply positioned the feature area in the eyepiece crosshair and fired a single laser pulse for each laser mark. The circuits are entirely isolated electrically, while the insulation layers were not affected. These images clearly show the distinct layers viewed and isolated through the top passivation layer.

The Micropoint laser system was mounted on a Zeiss Axiotech microscope, image capture and laser isolation performed using an Epiplan 100x/0.75 objective in brightfield mode. The lateral spot size is limited only by the diffraction limit of the objective, while the depth of the laser mark can be as little as 20nm on single molecular layers. This method allows for real time, repeatable results with no additional sample preparation requirements, and real time viewing through the microscope eyepieces with complete laser safety.

