

# High-resolution non-destructive three-dimensional imaging of integrated circuits

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It is remarkable that semiconductor technology is more advanced in its capacity to create complex systems than in the ability to image the outcomes. Conventional high-resolution microscopy for imaging the interior of three-dimensionally structured objects typically entails destructive sample preparation followed by electron microscopy of resulting surfaces or sections. Here we describe X-ray ptychography, a mixed real space/reciprocal space („wavelet“) technique, which is non-destructive and provides three-dimensional images at steadily improving resolution, which have now reached 15 nanometers. We show applications to integrated circuit inspection, and describe implications for security and quality control.

References:

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