

## AFM Materials Journal Club

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## Correlative AFM and Scanning Microlens Microscopy for Time-Efficient Multiscale Imaging

by Haibo Yu et al.

*Advanced Science*, (2022) 9, 2103902

This article is open access: <https://doi.org/10.1002/advs.202103902>

Hello researcher,

For this month's edition of the [AFM Materials Journal Club](#), I'd like to share an article that was recently published in *Advanced Science*, entitled '[Correlative AFM and Scanning Microlens Microscopy for Time-Efficient Multiscale Imaging](#)'.

With the rapid developments in microelectronics and nano-manufacturing technology, the physical size of integrated circuits is being driven relentlessly toward the nanoscale. As a result, **there is an increasing need to improve the resolution and efficiency of integrated circuit imaging and detection technology**, a balance which has proven challenging for conventional microscopes. It is necessary to develop new imaging techniques that are both high-speed and high-resolution.

In this publication, the authors took advantage of the flexible, open platform of Bruker's [Dimension Icon SPM](#) to develop a nondestructive, high throughput, multi scale correlative imaging method that **combines atomic force microscopy (AFM) and microlens based scanning optical microscopy (OM)**. By coupling a microlens to the end of an AFM cantilever and using it as a scanning probe, the authors were able to achieve three novel imaging modes:

1. fast, high throughput scanning optical imaging with the microlens;
2. high-resolution AFM imaging of surface fine structure; and
3. simultaneous microlens AFM imaging.

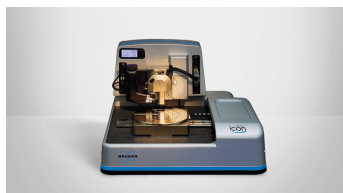
This correlative AFM-OM imaging method enabled the authors to bridge the resolution gap between traditional optical imaging and AFM, achieve cross scale rapid imaging from micrometer to nanometer resolution, and improve the efficiency of large scale AFM imaging and detection. **The direct correlation between optical image and structure information provides a potentially powerful tool for semiconductor device inspection.**

I hope you find the article interesting! Please feel free to [contact me](#) or your local Bruker applications team if you would like to discuss this topic further.

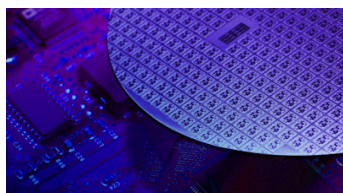


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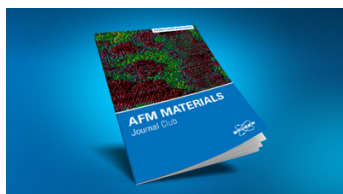


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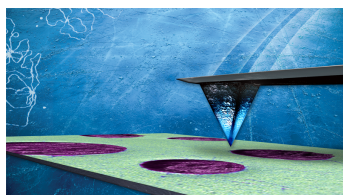


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