

Integrating Angular Orientation Data from HaloImages into Fiji Composite Image

The angular information encoded in the false-colour scheme reflects the spatial orientation of the LEDs relative to the sample in the HaloElement. This color-coded data offers insights into the sample's morphology and internal structure. We present a workflow in Fiji for creating a composite image that leverages angular data acquired through Halo imaging. By assigning a distinct colour to each individual channel, the method enables clear visualization of directional patterns within the sample, providing an effective means of representing angular information visually.

Creating a Fiji Composite from HaloElement Angular Data:

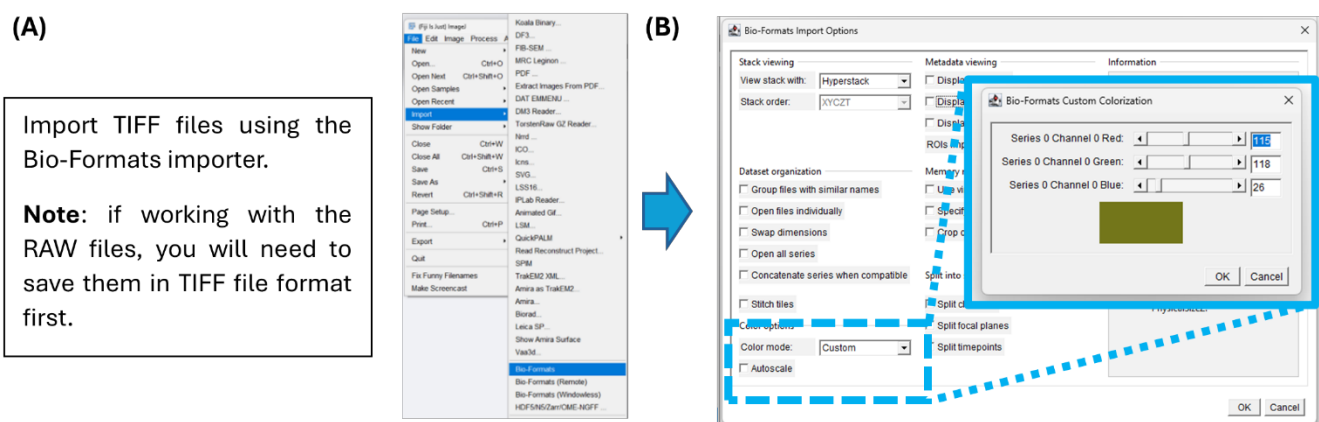


Figure (A) shows the process of opening individual ".TIFF" channels using the Bio-Formats Importer, while (B) displays the Bio-Formats dialog window. Each channel was assigned a distinct tone by dividing the 256-color 'phase' colormap from the cmocean collection by approximately 17, providing consistent and visually distinguishable colouring. In the *Colour mode* dropdown, select *Custom* to manually assign colour values to each channel. After importing, convert the image to RGB format via *Image > Type > RGB Colour*, and then save the image. The channel colouring approach follows the visualization style described by Thyng et al. (2016, *Oceanography*, 29(3), 10).

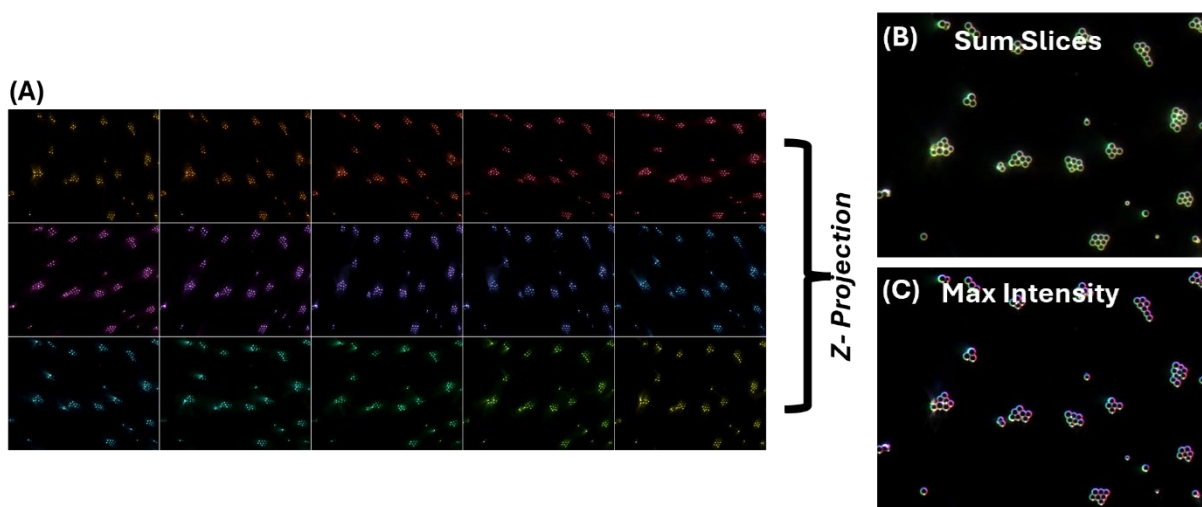


Figure (A) shows the individual channels of silicon bead samples in RGB format, coloured using the 'phase' colormap from the cmocean collection. To create a coloured composite projection, open all relevant images, group them into a stack, and navigate to *Image > Stacks > Z Project*. (B) shows the Z-projection using the 'Sum Slices' method that highlights internal structures, whereas (C) presents a Z-projection using the 'Max Projection' method, which is better suited for edge detection.