

New PA53 and Panthera 3D motorized microscopy platforms: Fully programmable large-scale motorized 3D microscopy, enabled by ABĒMIS anti-vibration meta-motor systems.

- Watch the HGon generation and working system video clip: ([Youtube link](#)), and **GUI** walkthrough (in depth): ([Motic link](#)) with audio. Note, the link takes you to **Motic's** Youtube channel.

In new partnership, **ABĒMIS+Motic** has developed a new series of fast **3D motorized** platforms with unique user-programmable GUI and scanning/imaging capabilities. Whole slides can be rapidly scanned as well as multiple slides – or **very large 170x120 mm specimens**. New HGon hyper-structures (Fig.1 below) are computationally optimized (see video) for maximum vibration absorption and ultra lightweight. Systems are newly installed at U.Illinois U-C.



Figure 1. Left, Motic PA53 HScope with V.3 XYZ motors. Right, closeup of Y-axis ultra-light, anti-vibration motor support.

The HGon motorized 3D anti-vibration mount systems are compatible with all types of upright and inverted microscopy frames, but are in particular **optimized** for the new **Motic PA53Bio**, Panthera, and BA410E systems. We have developed new Rapid Additive Manufacturing methods and carbon fiber embedded materials (in house) to generate ultra-light platforms that are *customizable* (and scaleable) to any desired stage or specimen size and shape. For further reading on our anti-vibration HGon core technologies, please refer to our NATURE Sci-rep publication ([link here](#)).

A unique feature of our Hscopes, is that they all come with a **user-programmable and customizable GUI**. Basic and advanced move-scan codes are thus simply implemented in C#-python blocks, enabling custom algorithms to be easily added. With the provided templates, additional functions such as **AI labeling, super-resolution**, interactive (AR/VR) and further imaging can all be done. All GUI features are accessible, even the layout! (Visual Studio template).

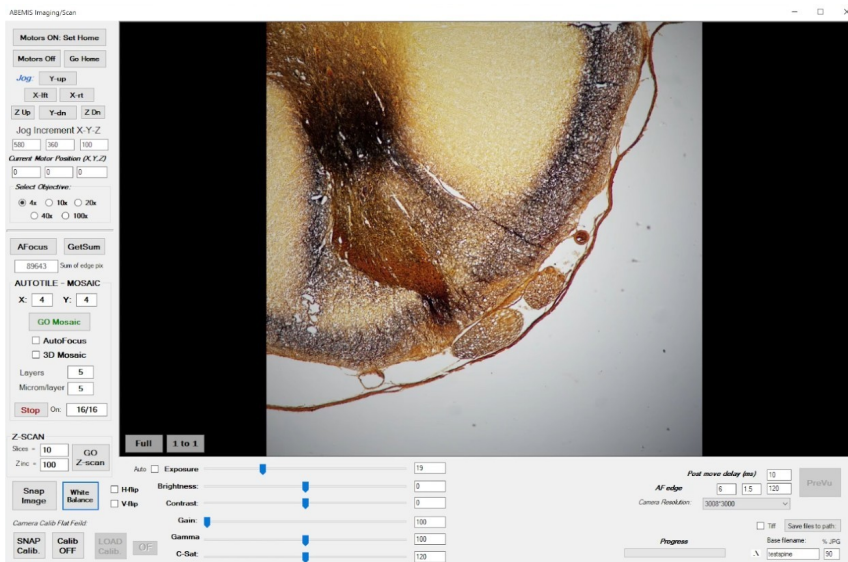


Figure 2. The new GUI showing motion control buttons and 3D mosaic parameters in the left panel, a live zoom-able preview window, and a bottom panel with multiple basic and advanced image controls such as calibration, auto-focus, and other advanced methods. Both white and black field image calibrations are one click (lower left).

Easy to edit code and tutorials are provided (C#-Python) to enable rapid, **customizable** advanced 3D scanning techniques such as Super-resolution, 3D-AI deconvolution, live cell tracking, and other exciting features.

With the HScope, *there is no limit* to what you can do for both your simple and advanced research, inspection, and automation goals...

“Astonishing!” K.Martin, Martin Microscopy

Shown below are two new systems recently installed at the University of Illinois Urbana-Champaign School of Integrated Biology. The Panthera (left) system uses transmitted light with motorized polarization and phase-polarization capabilities. The PA53Bio (right) and inverted frames have phase contrast, rotating motorized polarization (in development), and full EPI and Fluorescence imaging/filter set, with larger motorized stage platforms, up to **6×5.5 inch** travel.

Inverted systems are also available (system installed at Marquette U., Bing Yu, Ph.D).

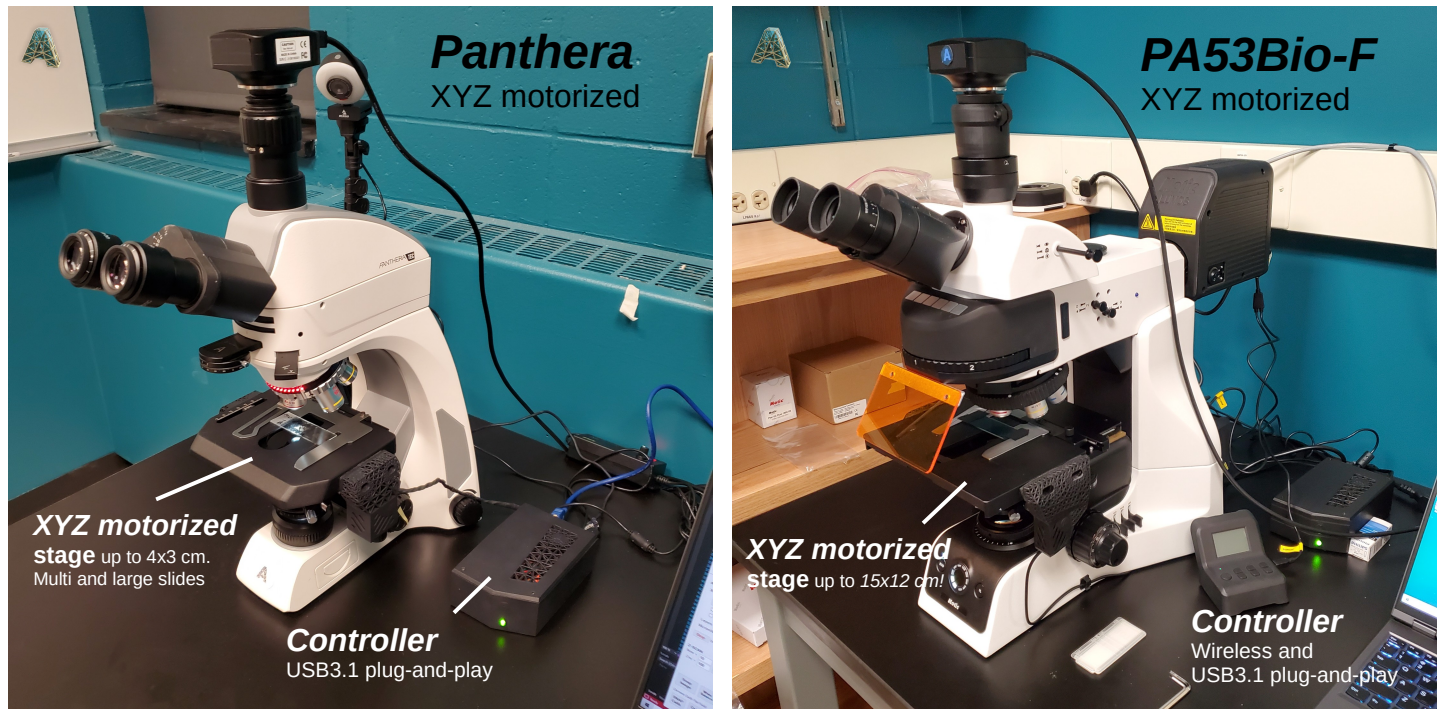


Figure 3. Systems recently installed at U. Illinois Urbana-Champaign. Left is the Panthera frame with 3D motorized stage (up to 4×4 cm travel) and USB3 controller. Right is the PA53Bio Fluorescence system with controller and giant 8×6 cm travel motorized stage.

Our patented (US10585420B2) HGoN hyper-structure technologies enable generation of motor mounts with unprecedented lightweight and vibration absorption. Shown below (Fig. 4) is the basic nonlinear FEA optimization procedure. The new Hyper-structure frames are ultra lightweight, enabling much faster motion than heavier, servo based systems.

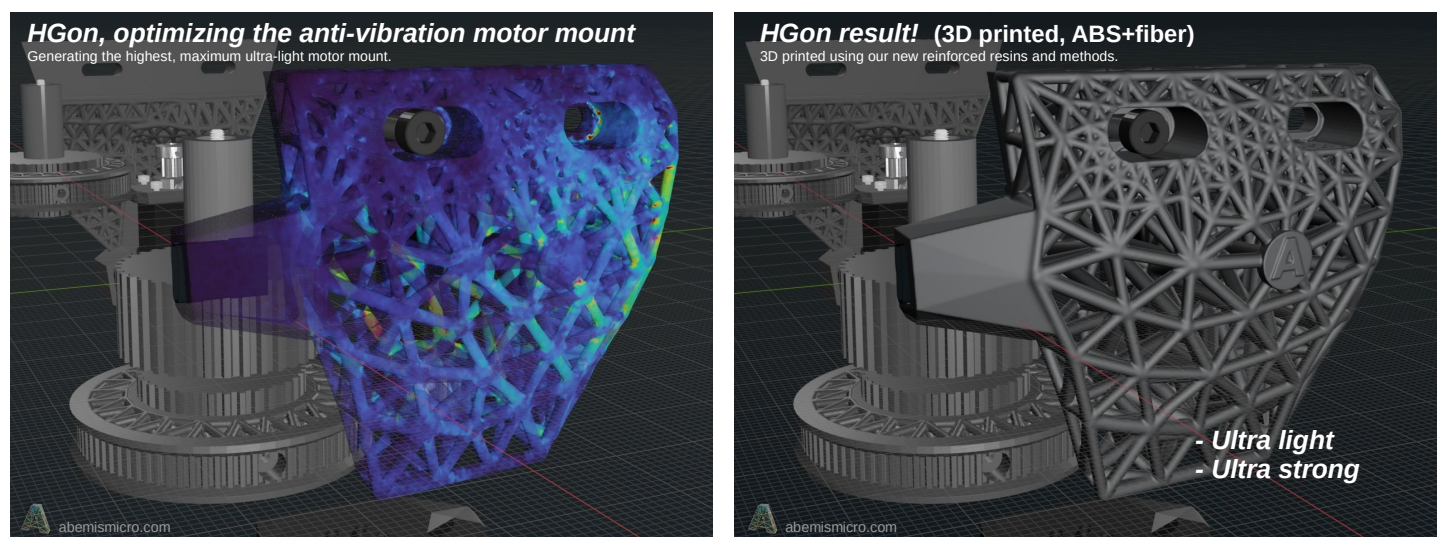
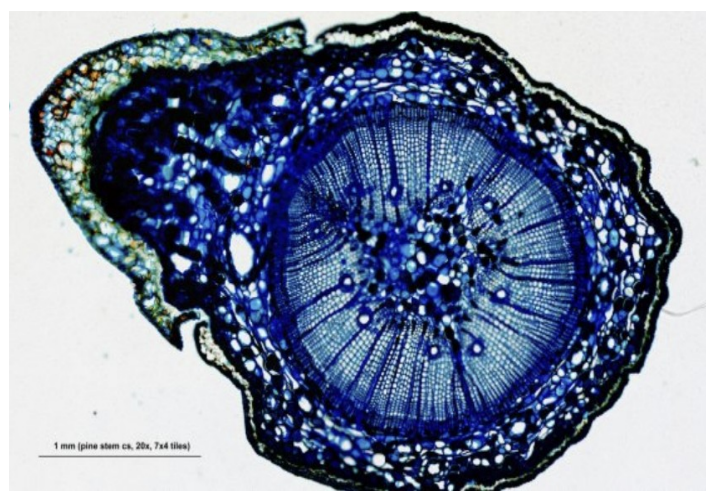
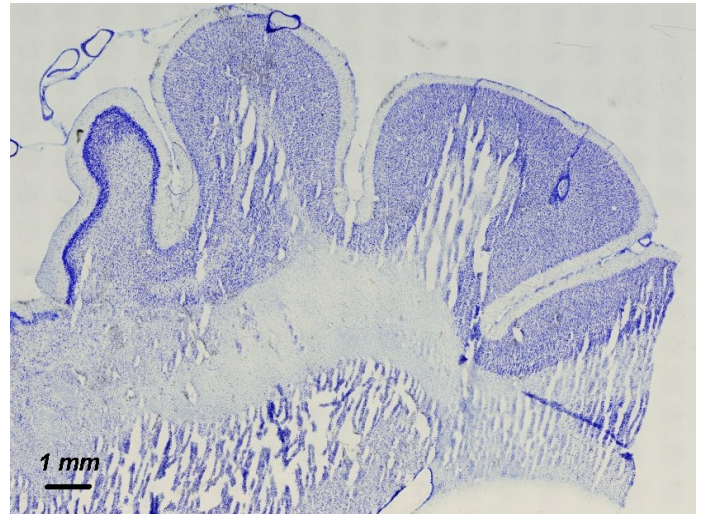
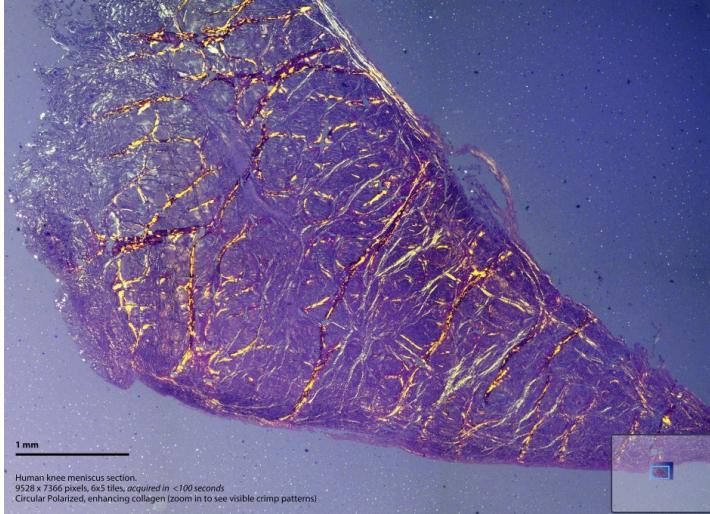


Figure 4. Motor mounts are optimized for ultra lightweight and anti-vibration properties using our unique FE based hyper-structure generation procedure. Left shows an intermediate optimization step, and right shows the final optimized motor mount hyper-structure, now 3D printed in high strength (fiber reinforced), custom developed materials for both the Panthera and PA53 Bio stages.

Imaging Results

Exciting results for very large specimens have been acquired. Examples are shown below.

Note that these images shown below are just *thumbnails!*, please see our new [Zoom Gallery](#) to view these and other recently acquired large GB images with interactive zooming and [full GB resolution](#).



We are excited to introduce a whole new class of HScope™ motorized microscopy systems for both whole slide and live *hyper-scopic* imaging and inspection systems with **Motic** frames and high quality optics imaging.

Our new Hscope platforms are:

- **Affordable** (contact us for a surprisingly affordable quote)
- **Fast** (whole slide scans in minutes)
- **Customizable and scaleable** (GUI and imaging code is provided! Nobody else does that.)

“The possibilities are endless!” , “We’ve always needed a motorized scope. This is finally affordable.” D. Miller, Ph.D. UIUC

Contact us for a **live demo** info@abemismicro.com, Todd Doehring, Ph.D, CEO tcd@abemis.com or Alex Loboazar (Director, Motic Scientific, North America, alobozar@motic-america.com for a consultation and/or live demonstration of our systems.

Full turnkey (hardware GPU, GUI software) systems are in production now (contact us). All images and info copyright 2022 (c), ABEMIS LLC