In-situ Video Software
Model 700.LS

The *In-situ* video software allows users to simultaneously record images from any Gatan camera/DigiScan™ device and the corresponding setting of supported *in-situ* holders/stages. As a result, it offers a systematic and accurate way to maintain the correlation of the recorded images with the *in-situ* device responsible for the observed specimen changes.

In traditional *in-situ* electron microscopy, a specimen holder/ stage applies a stimulus to a specimen while images are recorded using a camera or DigiScan software. In such a setup, the user of the electron microscope has to keep track of the images and the corresponding history of the external stimulus applied by the *in-situ* device. This is a manual process, and as such it is both tedious and prone to human error. Ideally the electron microscopist should be able to maintain perfect synchronization between the recorded image data and the values of the applied external stimulus. The *In-situ* video software is designed to manage the various data streams (recorded images and *in-situ* device setting) to ensure this synchronization.

The *In-situ* video software allows live updates of the *in-situ* device setting and displays it with each image frame acquired. The image and the *in-situ* data are then recorded in industry standard high definition (HD) video formats (uncompressed *.avi, *.mp4 or *.wmv) by a HD Video plug-in to DigitalMicrograph® (DM) software.

With the *In-situ* video software users can record in either continuous HD video (time series) or time-lapse mode depending on the *in-situ* process under study. The text fields that can be displayed automatically and recorded in the movie include items related to the microscope state, the camera/ DigiScan acquisition parameters, and the *in-situ* device setting.

The *In-situ* video software supports heating and cooling transmission electron microscope (TEM) holders and scanning electron microscope (SEM) stages controlled by SmartSet™ and ITC (model 503) controllers. It also supports 3rd party *in-situ* devices through an open architecture. The *In-situ* video software is fully compatible with DM scripting allowing users to further customize their *in-situ* experiments.

The *In-situ* and HD video software are part of the Gatan Microscopy Suite® (GMS) version 2.1. They are fully compatible with the Windows 7 32- and 64-bit operating systems. On the Windows XP 32-bit operating system only uncompressed video files can be generated.
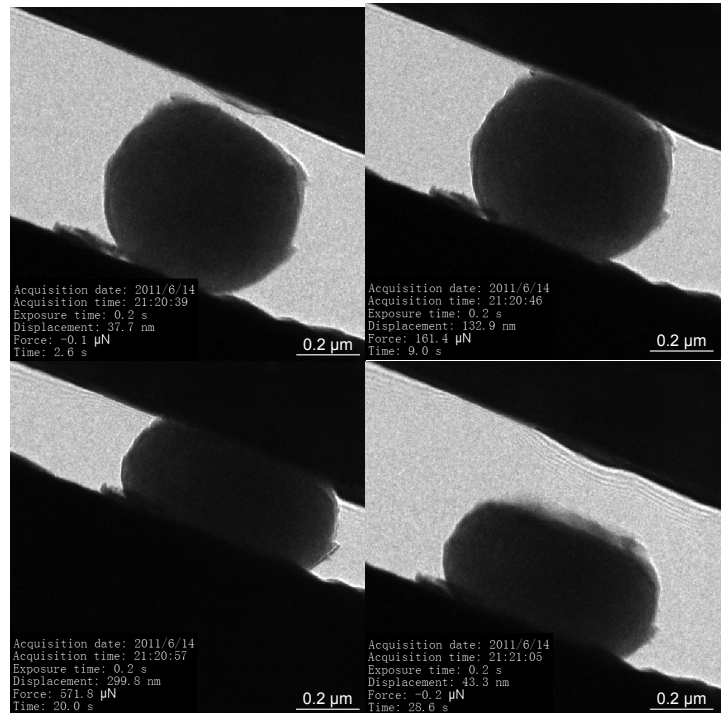

Figure 1. *In-situ* compression of a SiO_2 glass nanoparticle acquired with the Orius® 830 CCD camera. A 500 nm amorphous SiO_2 glass particle is plastically deformed using a Hysitron Picoindenter (PI95). The loading rate of 15 nm/s was generated by driving the flat diamond punch seen in the lower left corner of the images. The indentation experiment was coordinated and recorded using *In-situ* video software. *Images courtesy of Prof. Zhiwei Shan, CAMP-Nano, Xi'an Jiaotong University, China.*

Benefits

- **Supports all Gatan imaging devices (cameras and DigiScan:** Allows users to acquire both TEM and SEM images

- **High definition video:** Records HD video to a file
  - Record and playback frame rates can differ
  - Time lapse recording possible
  - Record front window, group of windows, or fixed area
  - Supports uncompressed *.avi, *.mp4, and *.wmv formats

- **Supports DM scripting:** Allows users to extend and customize their *in-situ* experiment

- **Open architecture**: Supports 3rd party *in-situ* devices

Ordering

Model	Description
700.LS.718.00.32.1	*In-situ* video software (32-bit); includes 719 HD video
700.LS.718.00.64.1	*In-situ* video software (64-bit); includes 719 HD video
718.T	Installation and training (required)
700.LS.719.00.32.1	HD video (32-bit); online
700.LS.719.00.64.1	HD video (64-bit); online
700.LS.719.01.32.1	HD video (32-bit); offline
700.LS.719.01.64.1	HD video (64-bit); offline
719.T	Installation and training (optional)
700.LS.719.00U2.32.1*	HD video (32-bit), upgrade from DSV (model 708)
700.LS.719.00U2.64.1*	HD video (64-bit), upgrade from DSV (model 708)

*If DSV software is on GMS 1.x, other software components also need to be upgraded.

Applications

- *In-situ* TEM, energy-filtered transmission electron microscopy (EFTEM) and SEM
- Dynamic specimen behavior (time series)

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