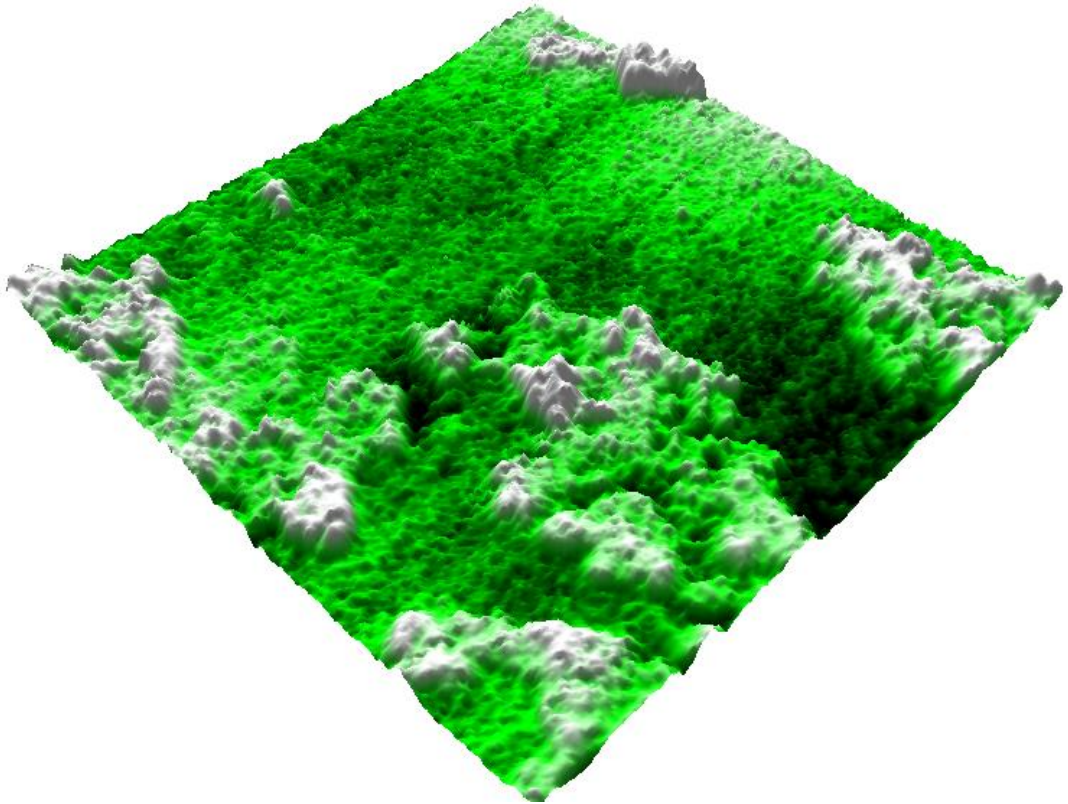
Size measurement of Nanoparticles using Atomic Force Microscopy (AFM)

American Premium Water Corp / LALPINA, January 2019

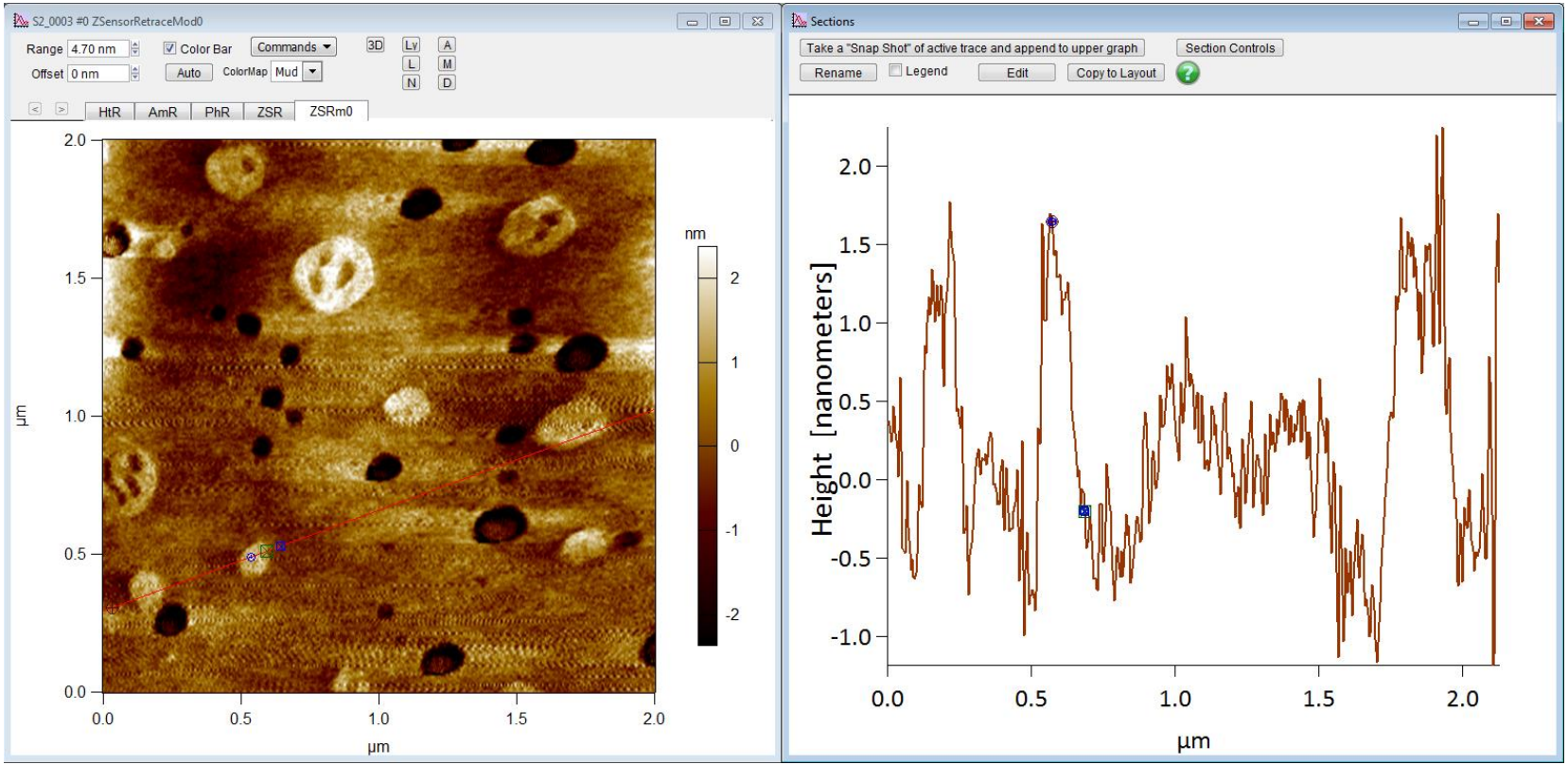


Sample 2 – 3D Topographic Atomic Force Microscope image of nanoparticles.
Scan area 2 mm x 2 mm. Height scale: 9 nm. Date: 1/10/2019

Methods

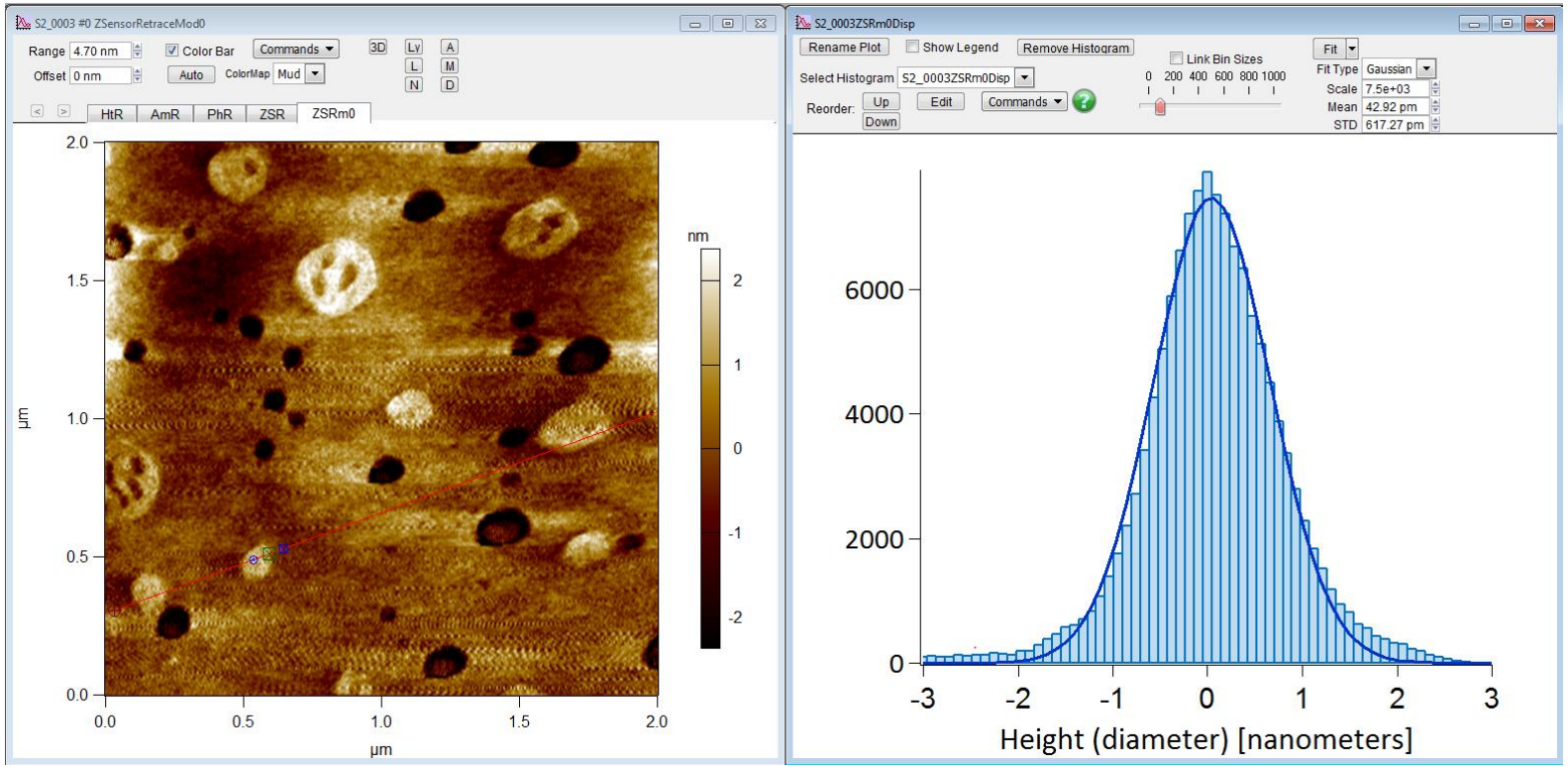
- All data was collected using Asylum Research's MFP-3D Atomic Force Microscope.
- Samples were deposited from solution on a freshly cleaved mica surface and solvent was dried on a hot plate at low temperature (less than 90 F)
- Measurement performed with cantilevers NCHR by Nanosensors.
- All data available in raw form for verification and additional data mining and post-processing.
- Methodology follows ASTM E2859 (2017) for nanoparticle size

Sample 2 – Nanoparticles on mica. Cross section. 1/10/2019



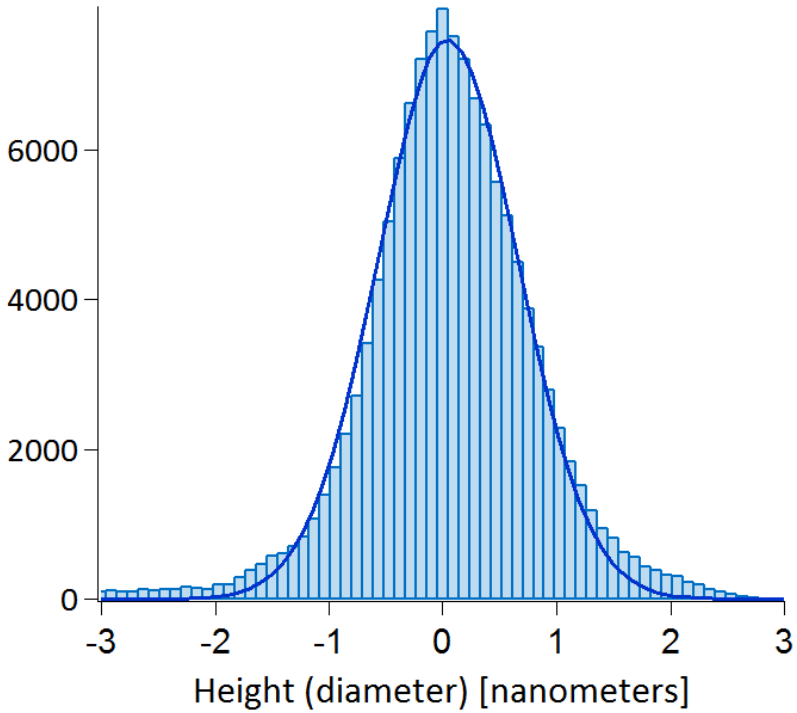
Cross section (red line on image). Sample particle marked by blue cursors: 1.5 nm

Sample 2 – Nanoparticles on mica. Diameter histogram.



Histogram of particles. 95% of nanoparticles diameter is less than 4 nm

Attachment– Histograms



Sample 2

References

- Standard Guide for Size Measurement of Nanoparticles Using Atomic Force Microscopy, ASTM E2859 (2017), Book of Standards 14.02, Subcommittee E56.02
- Measurement of the size of spherical nanoparticles by means of atomic force microscopy, O Couteau and G Roebben, 4/5/2011, Measurement Science and Technology, Vol. 22 Num. 6
- Size Measurement of Nanoparticles Using Atomic Force Microscopy, 01/15/2011, J. Grobelny et al. Methods in Molecular Biology 697:71-82