Virginia Military Institute, XtaLAB mini benchtop single crystal X-ray system

VMI (Virginia Military Institute), located in Lexington, VA, is one of only a few public colleges in the US that provides a broad liberal arts education within a military framework. All of the approximately 1700 cadets live in the VMI barracks, assemble for breakfast at 7AM, attend academic and military classes from 8AM to 4PM, and then receive sports or military training until 7PM. Cadets choose from among fourteen disciplines, including the sciences, engineering and liberal arts, and many conduct undergraduate research projects alongside their major professor.

Cadets wear uniforms and follow a strict military regimen throughout the day. In addition to their academic field of study, they learn discipline, time-management, and leadership skills that serve them well in both academic and military arenas. When they graduate with a baccalaureate degree, about 50% start their military careers as officers, while the other 50% pursue advanced academic degrees or employment in the public or private sectors.

Cadets conducting mid-day exercises.

Chemistry Lab.

As a VMI professor, Daren Timmons, the head of the chemistry department, also wears a uniform. His field of research mostly concerns the synthesis of new liquid crystals, and he is currently exploring the relationship between liquid crystal phases and molecular packing in the solid state. Some of this work will be presented at the upcoming ACS meeting in Boston.

Before his purchase of the XtaLAB mini, he was using a diffractometer located two hours from VMI. The strict schedule that VMI cadets adhere to made getting access to this instrument difficult; therefore, Prof. Timmons purchased an XtaLAB mini in 2013. He subsequently has solved many structures, including lantern-based metal complexes and MOFs (Metal Organic Framework) for both his research lab and advanced teaching laboratories.

Prof. Timmons says that the small footprint of the XtaLAB mini is a good fit for his laboratory size and that the low maintenance requirements are critical for an undergraduate institution. Combined with his existing polarizing microscope equipped with a temperature control stage and a DSC (Differential Scattering Calorimeter), the XtaLAB mini is accelerating his liquid crystal research. At present, he is the only user of the instrument, but he has started teaching undergraduate students how to mount crystals, and they will soon learn how to solve single crystal structures.

Prof. Daren J. TIMMONS with XtaLABmini in his Lab.