

Fabreeka® supplies ultra-low vibration control for sub-nanometer measurement and atomic level microscopy laboratories at the University of Birmingham.

The University of Birmingham is one of the largest metrology resources in Europe. At the time of this project the centre was in the process of commissioning an all-new nanometer laboratory. This state-of-the-art vibration isolated and environmentally controlled facility contains the following equipment: a scanning tunneling microscope operating at atomic level, a phase shift interferometer capable of sub-nanometer resolution and two optical focus detection instruments.

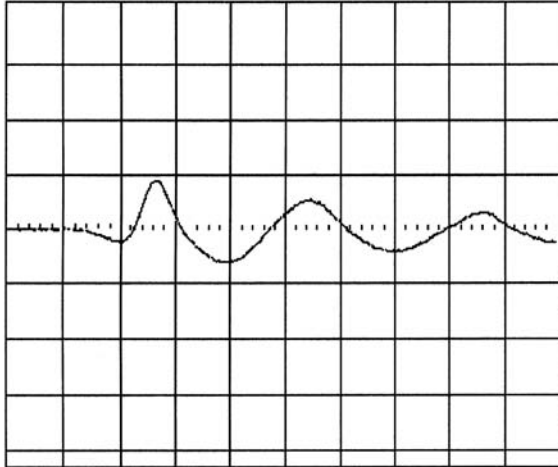
Three other laboratories at the centre were already completed. The first is dedicated to coordinate measuring machines, the second for surface analysis and the third for teaching graduate studies.

Fabreeka® has supplied ultra-low frequency pneumatic isolators for the equipment in the nanometer laboratory, as well as for CMM's in the metrology laboratory. Fabreeka® provided systems with the same isolation characteristics for three seismic masses in the surface analysis laboratory.

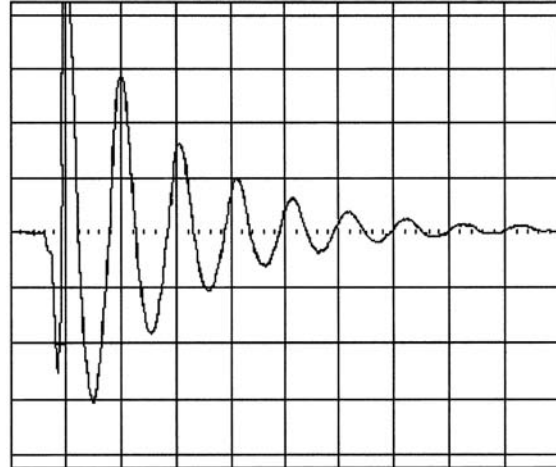
A total of 24 isolators were provided for these programs. Additionally, Fabreeka® offered assistance in the design of the support foundations by analyzing the vibrational modes of each.



Portions of the first field test report (see below) at the metrology and nanometer laboratories provided evidence of typical isolator response criteria having ultra-low natural frequencies and supporting payloads of up to 42,000 lbs per isolator.



Isolator response data – **vertical** axis. Data indicates a vertical natural frequency of 0.63 Hz with a damping ratio of 6.4% and an amplification at resonance of 7.7.



Isolator response data – **horizontal** axis. Data indicates a horizontal natural frequency of 0.45 Hz with a damping ratio of 8.6% and an amplification at resonance of 5.8.



Pictured at left, one of four PAL 55-52P isolators supporting the CMM foundation. Each isolator is 52" in height, supports 5,500 lbs and exhibits isolation characteristics shown above.

The University of Birmingham was pleased with the successful installation and completion of these "vibration-free" laboratories.