

Budget Justification

We are requesting \$92,561 from NSF for an ion trap mass spectrometer with electrospray (ESI) and atmospheric pressure chemical ionization sources (APCI), to be matched by Colby College. The ESI source will be used by all our projects, especially for protein work. ESI is the most commonly used source for LC/MS. The APCI source will be necessary for natural products, small molecule organic projects, and environmental projects. The improved source, ten-fold increase in sensitivity, and extended mass range of the LCQ-Deca are the primary strengths of this instrument over the Finnigan LCQ-Duo. The ability to do MSⁿ will greatly aid our natural products identification projects, and provide much needed experience for our students. The items in the budget cannot be further itemized.

The world of mass spectrometry is rapidly changing. We will reevaluate the available instruments when funds become available through new competitive bids. The Bruker/HP ion trap is currently considerably more expensive. Varian is also developing an LC/MS ion trap system. Any new advances in analyzer design will, of course, also be considered.

If we are able to negotiate better prices on the system, any savings will be applied to adding a low-flow HPLC pump for use with micro-column HPLC (\$11,183), a diode-array detector (\$11,800), and autosampler (\$9,500). A low-flow HPLC pump will allow us to use narrower columns, which will increase sensitivity. A diode-array detector will have a smaller cell that will be better matched to micro-column use in addition to giving much more information from each HPLC run.

Budget

<u>Item</u>	<u>Price</u>
Thermo-Separations/Finnigan LCQ-Deca ion trap mass spectrometer	
Analyzer, APCI source and Data system	\$168,900
APCI source	\$ 10,000
Electrospray ionization source	\$ 10,000
<u>Total</u>	<u>\$188,900</u>
Total less 2% educational discount	\$185,122
Colby portion \$92,561	NSF portion \$92,561