

BUDGET JUSTIFICATION

1. Salary and Fringes

PI: Dr. Smith will spend one month of his summer time on this project. He is a full-time (9 month) associate professor in Michigan Tech's Materials Science and Engineering department and will continue to advise the graduate and undergraduate students during the academic year. The PI will also be responsible for the production, characterization, and derivatization of widgets.

Graduate student: This proposed project requests one graduate student to work for three years. The student will be involved in the functionalization of widget electrodes and the identification of appropriate widget partners with active labels.

Undergraduate student: One undergraduate student will work with this project (8 hours/ per week plus full time in the summer at \$8.00/hr). His/her salary will be paid from this project.

Beginning in year 2 an increase of 5% is estimated for faculty and 3% graduate students.

Fringes: Michigan Tech fringes are calculated as a percentage of salaries. The current rate for faculty summer/extra compensation is 20.5%, graduate students are 8.6%. No fringes are calculated for the undergraduate student. Fringe rates are audited by the Office of Naval Research.

2. Equipment: Funds are requested in the amount of \$16,233 in the first year for the purchase of a laminar flow hood (\$10,841) and a liquid nitrogen cryostorage system (\$5,392). As these items are available from Fisher Scientific's general catalog, specific quotes were not obtained. PDF copies of the relevant catalog pages from the company's website have been uploaded as supplementary documents.

3. Material and Supplies

Regular chemicals (\$7,000/yr): CO₂ gas, Li₃N, C₃N₃Cl₃, Pt, Ru, Ni, Rh.

Small parts for test units (\$3000 in Years 1 and 2): Gas pipes, tubing connectors, flow controllers, pressure gauges and gas cylinder regulators.

4. Publication/Documentation: \$1000/yr will be needed for the publication of research papers in professional journals.

5. Travel

\$4000 will be needed for the PI and graduate student to travel in Year 3 to the WYZ Lab at ABC University in Ithaca, New York, for high-resolution synchrotron X-ray diffraction experiments.

\$2000 will be needed to support the PI to attend a national meeting in the third year.

\$1500 will be needed to support a graduate student involved in this project to attend a national meeting in the second year.

6. Other

Instrument use fee (\$1500/yr): Analytical instruments, including TEM, SEM, XPS, and XRD, will be used in this proposed work. University approved use fees are in place for these instruments.

Graduate student tuition and fees: Tuition & fees for a full time graduate student are requested.

7. Indirect Costs: Michigan Tech's current indirect cost rate for on campus research is 53% of Modified Total Direct Costs (MTDC). Indirect costs are audited by the Office of Naval Research.