

PHILANTHROPY GRANT  
APPLICATION

1. The funding is for a downsized version of the Fiber Laser (FBL) to collect experimental data and for simulations of the process of mining in space.
2. The overall achievement and mission for ALMA is to prove that you can use a Fiber LASER (FBL) for mining water ice in the vacuum of space. This includes ice on the moon, NEOs, and asteroids in the asteroid and Kuiper belt. The bulk of the project will be theoretical, but we will require a downscaled version to collect data for the simulations. This is because we do not want to assume anything; we want this to be as accurate as possible. The reasoning behind using an FBL and not another type of LASER is due to the efficiency and ease of use the FBL has. The FBL uses less electricity and therefore is more cost-efficient, has a higher power to electricity ratio, uses a simpler design and is compact and flexible, and is reliable, maintenance-free.
3. This gives students the opportunity to learn physics and mathematical theory and its real-world applications of lasers. This will inevitably give experience to everyone in the workforce.
4. COST: \$10,000
5. Space mining is the future of humanity and needs to have solid evidence that it is possible so that businesses may be able to invest into our future. This project is that steppingstone we need to prove it is possible so that this dream can become a reality.
6. The base necessity of the project is the simulations, where the FBL is a proof of design and for receiving experimental values for the simulations. If I do not receive all the funds I needed for the FBL, I will use it for simulations and safety, for future experiments.
7. The external resources for this project are experimental values and techniques for simulations and experiments from other research. But even then, it is a small amount for this field of research.
8. Additional funds will go towards multiple types of output for the FBL, including different wavelengths. This is so that we can experiment with more than one wavelength to see which is best for our purposes and for further simulation sources.
9. Earth's resources, including precious metals and water, will not last forever, thus humans will need to venture into space to find necessities. There is not enough effort going into this problem, where this project will be a step forward for research in mining water ice in space using a FBL. One company trying to start the space mining race is AstroForge, which launched this year. The more research going into this and the faster we can find a solution the better.
10. If our simulations come out as a feasible outcome and the data we received from the experiments using the FBL is applicable. We will have proved what was once thought of as impossible and futuristic, a present and practical application. We will also try to get this research project published, having the possibility to build a high-powered FBL used in the simulations. If the outcome is not possible, then it is still a positive result because we will know that we cannot use it. Therefore, researching other technology that might be more feasible to mine in space.