



## Summary

ZiNIR's Solo® Spectroscopy chip is a highly compact, monolithic solid state spectrometer based on an array of microdisk resonators. Due to its very small size and mass, physical robustness and low cost, it has great potential for space applications.

In this project, through a thorough technical market research exercise a variety of markets/applications have been identified for the spectrometer chip in the space technology sector and prioritised according to technical feasibility, potential disruption to the market and importance to the UK space sector.

The main work carried out in this project involved conducting interviews and discussions with experts in various fields of space technology. This resulted in the identification of a number of potential applications for the spectrometer chip, along with the technical requirements of those applications and the types of instruments and technologies currently used.

A number of different potential applications of the Solo chip, along with analyses of the potential impact of Solo Spectroscopy on these markets and the technical feasibility of meeting their technical requirements was investigated. The applications were then prioritised and technical specifications given for three applications that have been determined to be of high priority owing to the market opportunity: CO<sub>2</sub> sensing, chlorophyll fluorescence and "red-edge" analysis, and optical satellite communications.

Finally, a plan for building upon the outcomes of this study is defined and funding sources identified. These include a further NSTP Grant for Exploratory Ideas, the ESA Innovation Triangle Initiative and the Horizon 2020 programme. Through this project, ZiNIR has also built a network of potential collaborators and end-users, expanded our knowledge of the space technology sector and raised our profile in the community. This will facilitate further collaborations and funding opportunities, helping to bring our technology closer to market and addressing the needs of the UK space sector.