

| | | TRL 1-3 | TRL 4-5 | TRL 6-7 | TRL 8-9 |
|---|--|---------|---------|---------|---------|
| Formulation Technologies | | | | | |
| Crop protection | Silica carrier particles that encapsulate active ingredients (AI) to provide UV protection, increased rainfastness and easier formulation of hydrophobic AI | | 4 | | |
| Engineered nano-clay for agriculture applications | Novel nano-clay technology with enhanced cation exchange capacity and efficient loading of agricultural actives | | 4 | | |
| UAVs and Robotics | | | | | |
| Y4 | A more efficient quadrotor UAV design with longer duration suitable for industrial applications | | | 6 | |
| Safety rotor | A lightweight safety feature for minimizing blade impact in UAV operation | | | 6 | |
| Novel LIDAR | A novel multi pixel solid state LIDAR | 3 | | | |
| Sensors, Devices and Optoelectronics | | | | | |
| Forcesensor | A novel method of detecting force and torque for UAV/robotics and industry | | | 6 | |
| Self-mixing Terahertz laser | A novel sensing and imaging technology in the terahertz spectrum | | 4 | | |
| Ultra high sensitivity magnetometer | Ultrasensitive chip sized detection of magnetic fields; applicable in other sectors too | 3 | | | |
| A passive, on chip, superconducting microwave circulator with high bandwidth (~500 MHz) | | 3 | | | |
| Organic lasing materials | Electrically pumped organic semiconductor lasers based upon novel optical cavities and organic semiconductors. Applications in flexible, flat screen displays, sensors, spectroscopy and telecommunications | 3 | | | |
| New class of colloidal QD for optoelectronics | Process for synthesising highly stable QDs with efficient light emission demonstrated in deep red and near IR (process can also be applied to green and blue QDs) | 3 | | | |
| Light emitting field effect transistors | An organic light-emitting field-effect transistor containing a delayed fluorescent material. Excitons can be efficiently used for light emission to remarkably enhance the emission efficiency of the transistor and high mobility along with high on/off ratios | 2 | | | |
| Big Data Solutions - Health, Telecommunications | | | | | |
| Digital pathology | The first stand-alone, ultra-fast, fully automated, microscope-free, fully certified analysis and diagnostic platform for pathology slides | | | | 9 |
| Alarm management system | A novel method of alarm prioritisation, focusing on all processes as a predictive, prescriptive alarm management solution, covering the alarm life cycle | | 5 | | |
| Spectrum enhancement | Novel method for increased spectral efficiency in telecommunications. Out of band power suppression. | | 4 | | |
| Blockchain health | A new method of managing health data with a focus on privacy preservation and data ownership | 2 | | | |
| Water and Environmental | | | | | |
| SeweX | Algorithm-based software for H2S, corrosion reduction and sewer network modelling. Potential for SaaS redevelopment. Commercial projects all over Australia and internationally | | | | 9 |
| Lodomat | For use in wastewater treatment plants: a novel process for increasing biogas production and reducing sludge disposal costs from anaerobic digestion, reducing the cost of nitrogen removal and improving the efficiency of the anammox process | | 5 | | |
| Alkaline digestion of waste glass | A simple process developed for the extraction of sodium silicate from soda-lime glass, characterised by a high utilisation of the raw material and energy embodied in glass. | | 4 | | |
| E-waste recycling | Recovering gold and other metals from e-waste using low capex/opex hydrometallurgical process | 3 | | | |

TRL 1-3
TRL 4-5
TRL 6-7
TRL 8-9

| Advanced Materials | | | | | |
|---|---|---|---|---|--|
| Nanocomposite elastomers | Strong, tough, yet low modulus elastomers enabled by reinforcement with flexible, tough nanofibers of cellulose | | | 6 | |
| Nanocellulose | High aspect ratio, extremely tough nanofibers of cellulose for reinforcement, paper, concrete and other applications | | | 6 | |
| Membrane crystalliser | Continuous crystallisation to produce high quality solid crystal product from solution in a single step | | 4 | | |
| Ultra-bright, low power QD displays and lighting | Significantly improve the ability of quantum dots (QDs) to capture incident light and produce a brighter fluorescence emission | | 4 | | |
| Mining and Energy Innovation | | | | | |
| Fault detection in solar farms | An algorithm to detect and locate faults to single panel in large solar farms | | 5 | | |
| Frother measuring system | An <i>in-situ</i> device to accurately measure frother concentration in a flotation cell to increase efficiency, yield and revenue of a mining process | | 4 | | |
| Photorechargeable battery | Integrated photo-rechargeable battery with a high photovoltaic conversion/storage efficiency of 11%, and remarkable rate-capacity and cycling stability | | 4 | | |
| Record efficiency QD solar cell | Breakthrough on low-cost emerging generation quantum dot solar cells that achieve a verified world record efficiency of 16.6% | | 4 | | |
| Producing Zeolite from mining tailing | A novel technology to use waste and mining tailings to produce high value Zeolite | | 4 | | |
| Flotation stability improvement system | An <i>in-situ</i> device to improve stability of froth in mineral flotation processes, using specific sound waves | 3 | | | |
| Optimised blast / drill hole location system | An algorithm to indicate the best next blast/drill hole to optimise operation and reduce cost of blast and operation | 2 | | | |
| Medical Technologies | | | | | |
| Accelerated mapping of magnetic susceptibility at ultra-high level field strength MRI | | | 4 | | |
| High sensitivity immun assays | Nanotechnology-enabled amplification of signals in immunoassays to lower limits of detection | 3 | | | |
| Structural PET imaging using quantum entanglement | A method of using Compton cameras to pinpoint the scattering sites when entangled gamma ray photons are involved, which can lead to the visualisation of structural information. | 3 | | | |
| Space Technologies | | | | | |
| Hypersonix | A 3-stage launch vehicle for launching small (~100kg) satellites into Low Earth Orbit. The first stage flies back to base using a deployable aeronautical system. The second stage uses a reusable scram jet vehicle and the third stage is a conventional single use rocket. | 3 | | | |

▼ Definition of Technology Readiness Levels (TRLs)

- | | |
|---|---|
| TRL 1 Basic principles observed and reported | TRL 6 System/subsystem model or prototyping demonstration in a relevant end-to-end environment |
| TRL 2 Technology concept and/or application formulated | TRL 7 System prototyping demonstration in an operational environment |
| TRL 3 Analytical and experimental critical function and/or characteristic proof-of concept | TRL 8 Actual system completed and "mission qualified" through test and demonstration in an operational environment |
| TRL 4 Component/subsystem validation in laboratory environment | TRL 9 Actual system "mission proven" through successful mission operations |
| TRL 5 System/subsystem/component validation in relevant environment | |

Source: esto.nasa.gov/files/trl_definitions.pdf

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¹ - As measured by the QS World University Rankings (46) and the Performance Ranking of Scientific Papers for World Universities (45)