The Monash team have developed a novel encapsulation process. One of the uses of this new technology is rapid, selective and environmentally friendly extraction of gold from e-waste streams. This easily scalable process seeks out the valuable components, before binding and separating them from low value components, to allow economic metal recycling.

- Targeted Gold extraction using encapsulation
- Rapid reaction for high-throughput
- Easily scalable
- Recyclable

**THE CHALLENGE**

With diminishing ore stocks and an ever-growing demand for metals and minerals, metals recycling has become critical.

E-waste is a surprisingly abundant source of precious and base metals (up to 30x more than an ore).

Extraction of metals from e-waste streams is typically performed using high-energy, high-cost processes developed for mining operations.

These processes are often ill-suited to the scale, location and chemistry of the material, making e-waste recycling a marginal proposition. An ideal extraction technology would possess the following characteristics:

- Selective for the material(s) of interest
- Low reagent utilisation
- Ambient conditions
- Minimal waste production

Encapsulation is well-suited to these problems.

**THE TECHNOLOGY**

This new technology focuses on encapsulation for gold extraction

1. Functionalised capsules seek gold regions
2. Chemicals for gold dissolution are released in a highly localised fashion promoting rapid dissolution.
3. The highly specific encapsulation process occurs to capture gold.
4. >90% Capsules with gold can be separated in a pure concentrated stream in 2 to 5 hrs from the low value-e-waste
5. Capsules can be re-loaded and recycled for use.

Other e-waste metals can be targeted for encapsulation technology

**THE OPPORTUNITY**

Monash is seeking a licensing and/or investment partner for this e-waste application as well the encapsulation technology.

**THE TEAM**

The inventors for this technology are Dr Shane Meaney, Dr Rico Tabor, and Prof Bart Folink.