



# VCU

VIRGINIA COMMONWEALTH UNIVERSITY

## "Controlled and Sustained Delivery of Oxygen Using Microcapsules Formulation" VCU # 12-102

### Applications

- Intravascular oxygen delivery
- Intestinal oxygen supply
- Wound healing
- Burn treatment
- Tissue and organ damage repair

### Advantages

- Controlled and prolonged release of oxygen
- Broad range of applications
- Compatibility with intravenous, gastrointestinal and topical use

### Inventors

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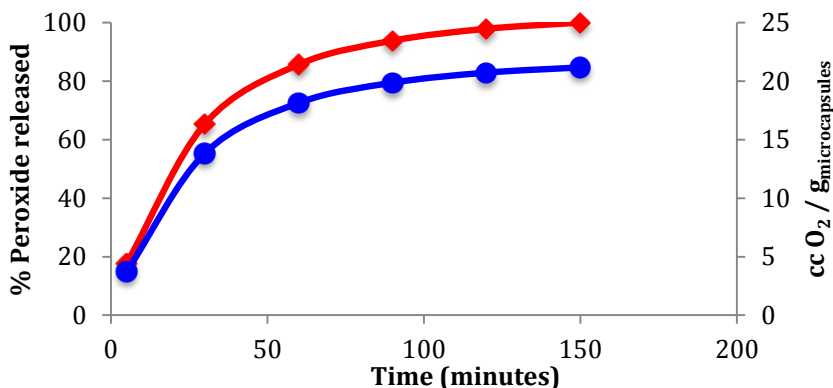
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### Market Need

Tissue and organ injury represent a significant burden on the patients, caregivers and health systems around the world. Wound care costs the US more than \$20 billion a year, including more than \$4 billion spent on wound management products. Continuous supply of oxygen to injured tissue is crucial for the healing process and infection resistance, but providing sufficient oxygenation in the early moments after injury is a challenge in austere environments such as those that exist in combat. All previous attempts to provide systemic oxygenation using hydrogen peroxide as a precursor have failed due to uncontrolled production of large amounts of oxygen.

### Technology Summary

This is a novel method of encapsulating liquid hydrogen peroxide for the purpose of intravenous, intestinal and topical oxygen delivery, which has been developed using biocompatible and bioresorbable polymers. Created this way microcapsules release hydrogen peroxide and produce oxygen in a controlled manner for a period of 2 to 48 hours. The figure below demonstrates production of the oxygen (blue) from released hydrogen peroxide (red) calculated at 37°C using ideal gas equation. This technology can be used for a broad range of applications such as non-pulmonary oxygenation, wound healing, intravenous and intestinal oxygen supply.



### Technology Status

Patent pending: U.S. and foreign rights are available.

*In vitro* data available.

This technology is available for licensing to industry for further development and commercialization.