LUMEN EXTRACTION TRIA-CORE™

I. TITLE OF THE INVENTION

Lumen Extraction TRIA-CORE™: Inward-Directed Lumen Collector Architecture With Electromagnetic and Sonic Biophotonic Stimulation for Enhanced Ultraweak Photon Harvesting

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II. ABSTRACT

The invention provides a multi-stage biophotonic harvesting system built around a novel inward-directed lumen collector architecture. Living plant tissue emits ultraweak biophotons during metabolic activity. Conventional biophoton systems detect only outward or randomly scattered emission, resulting in low sensitivity and poor photon capture efficiency.

The Lumen Extraction TRIA-CORE™ system introduces a multi-collector inward-directed geometry that captures lateral, scattered, and weak emissions from biomass or biological material. Each collector includes a parabolic funnel, narrowing conical stage, cylindrical light-piping core, micro-mirror facet arrays, and optional fiber-optic conduits for delivering concentrated photons to a central detection module.

Integrated electromagnetic and sonic resonance stimulation further increases metabolic excitation and photon output. The system enables highly concentrated detection of ultraweak photons for biological analysis, research, energy conversion, sensing, and bio-optical applications.

III. FIELD OF THE INVENTION

This invention relates to optical collection systems, bio-photonics, biological optical emissions, plant metabolomics, and photon harvesting devices. It further relates to systems that intensify, redirect, and measure ultraweak photon emission through staged optical geometries, modulation systems, and multi-collector arrays surrounding biological material.

IV. BACKGROUND OF THE INVENTION

Ultraweak photon emission (UPE) is a measurable output of living tissues including plants, algae, fungi, and certain biological substrates. Traditional methods use cameras, PMTs, photodiodes, or dark enclosures to detect weak emissions. However, these systems suffer from poor directional capture, low signal strength, inefficient lateral photon retrieval, and inability to concentrate scattered photons.

Current UPE tools detect only the photons traveling outward toward the detector. But biological material emits photons in all directions — including sideways and at grazing angles — which are normally lost.

The Lumen Extraction TRIA-CORE™ system solves this by creating an inward-directed geometric architecture with multi-collector arrays actively funneling scattered photons toward a central detection pathway.

V. SUMMARY OF THE INVENTION

The system uses multiple staged optical collectors surrounding biological material. Each collector includes a parabolic outer funnel, conical narrowing stage, cylindrical light-piping core, internal micro-mirror facets, and optional fiber-optic conduits.

Electromagnetic and sonic resonance stimulators increase biophoton emission. The collectors operate cooperatively, capturing photons from 360° around the biomass, redirecting and concentrating them toward a central detector.

This invention enables ultraweak photon concentration far beyond conventional dark-box or camera-based systems.

VI. BRIEF DESCRIPTION OF THE DRAWINGS

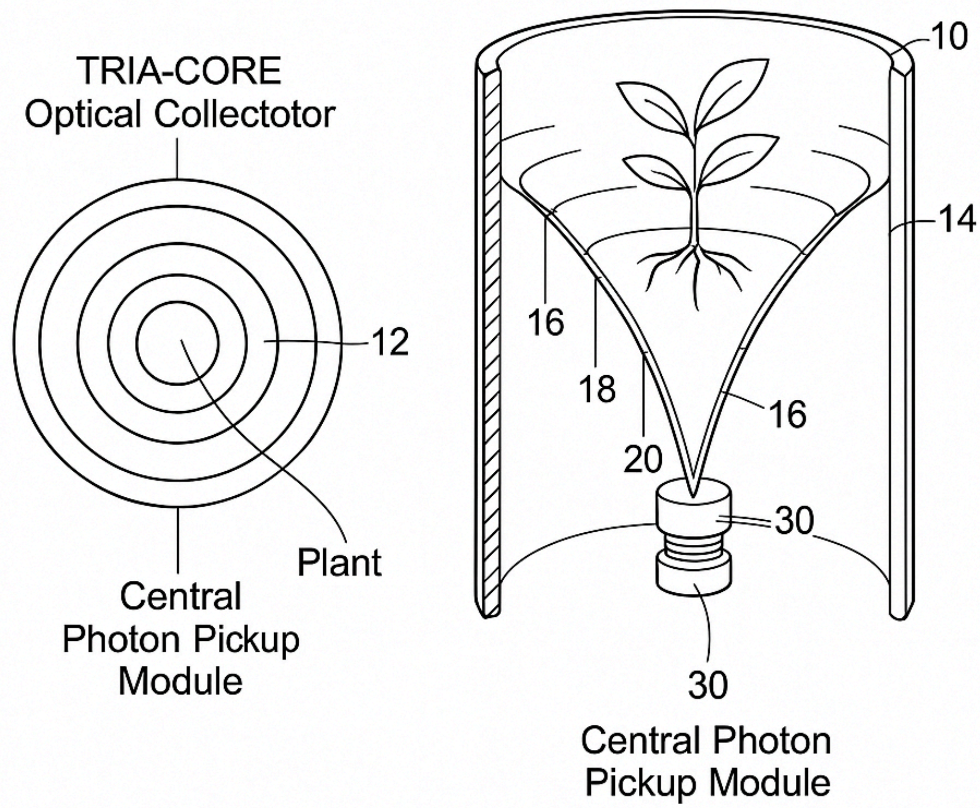

FIG. 1
System Overwiew

- **FIG. 1** — Single TRIA-CORE™ cross-section

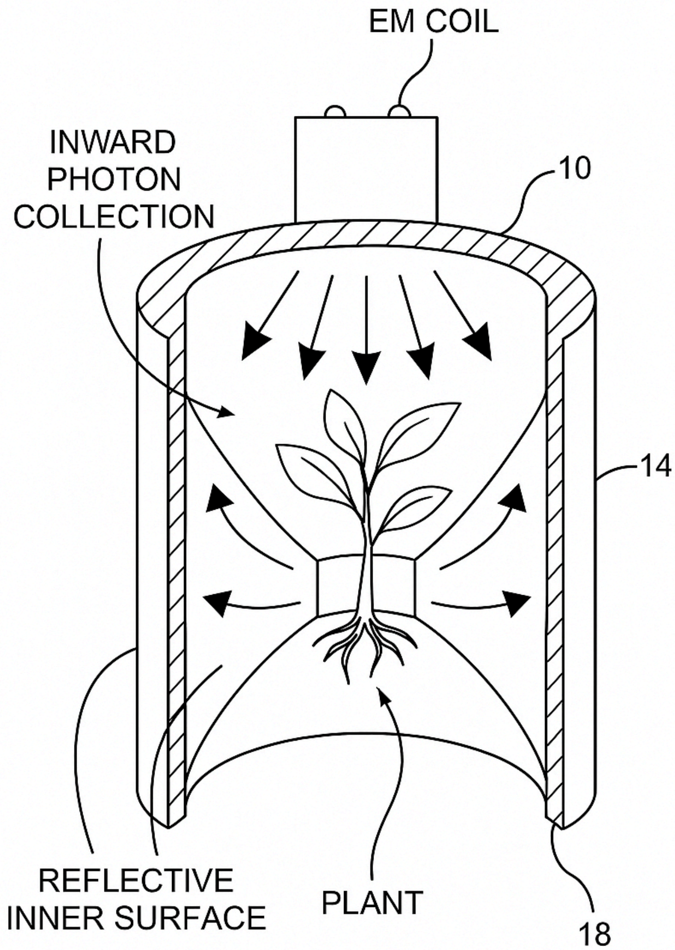

FIG. 2

- **FIG. 2** — Multi-collector array (360°)

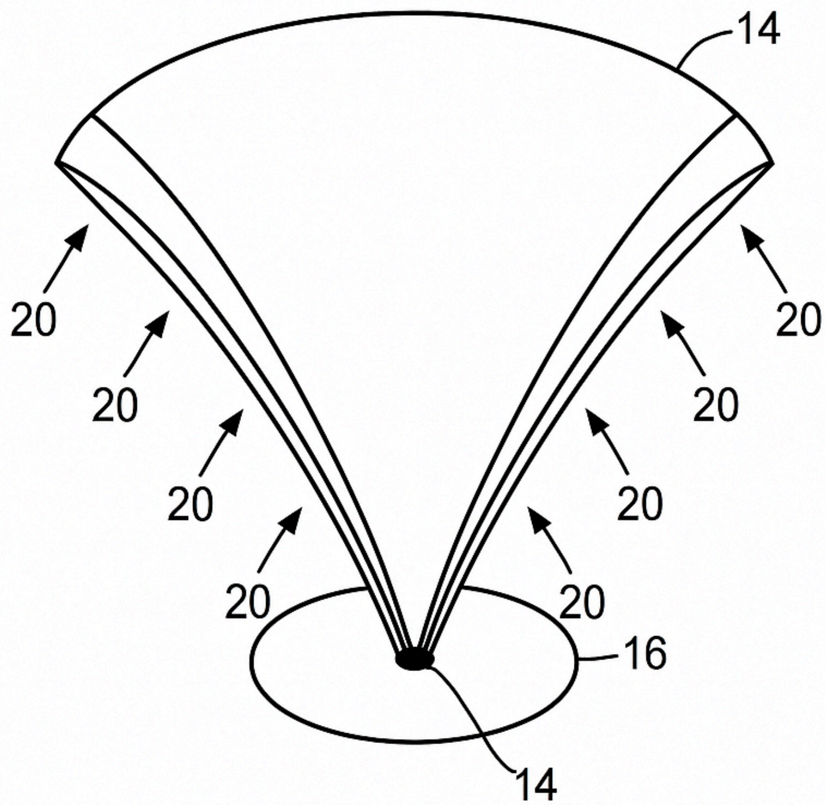

FIG. 3

- **FIG. 3** — Three-stage geometry overview

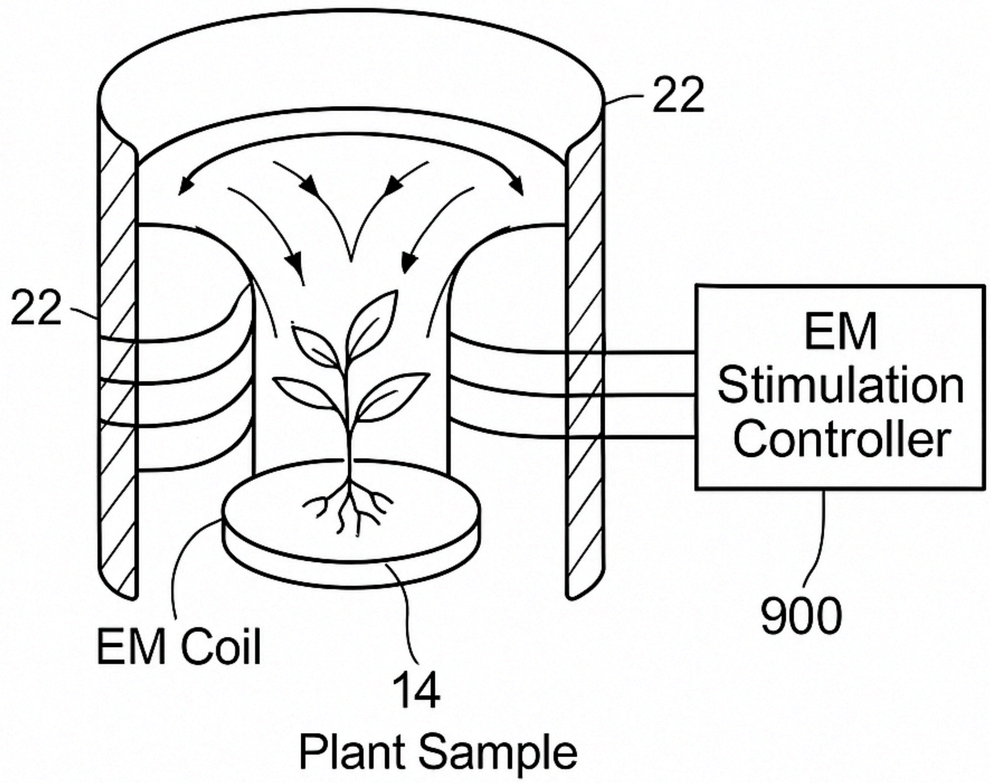

FIG. 4

- **FIG. 4** — Environmental layout

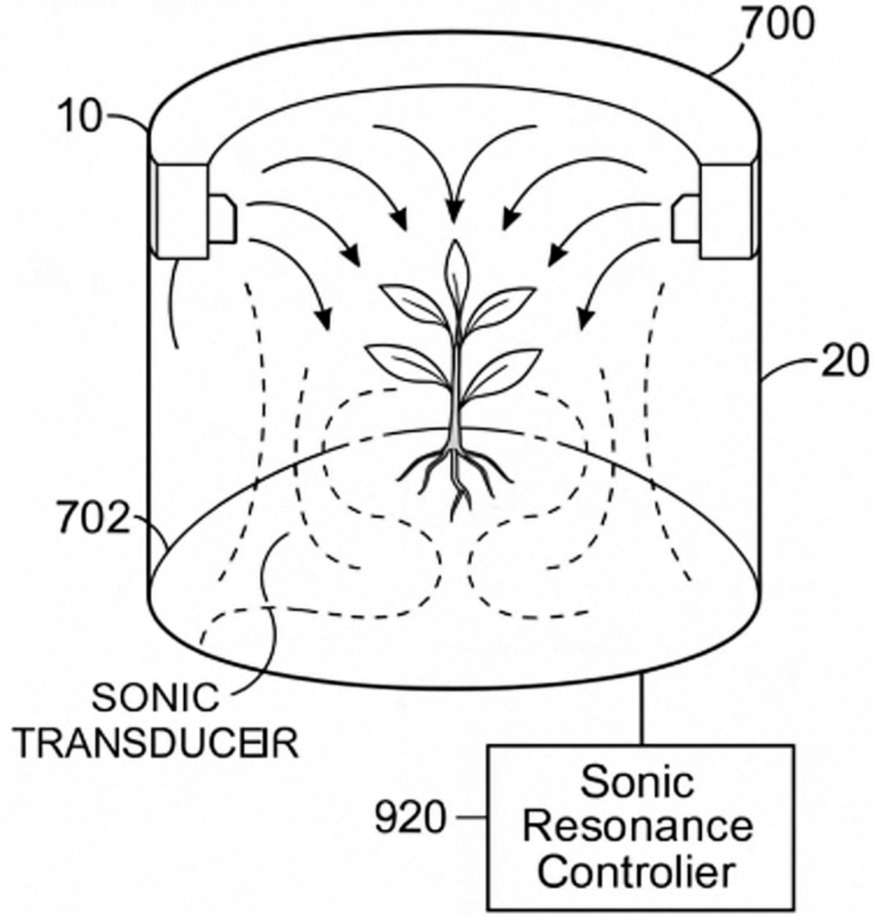

FIG. 5

- **FIG. 5** — Micro-mirror facet detail

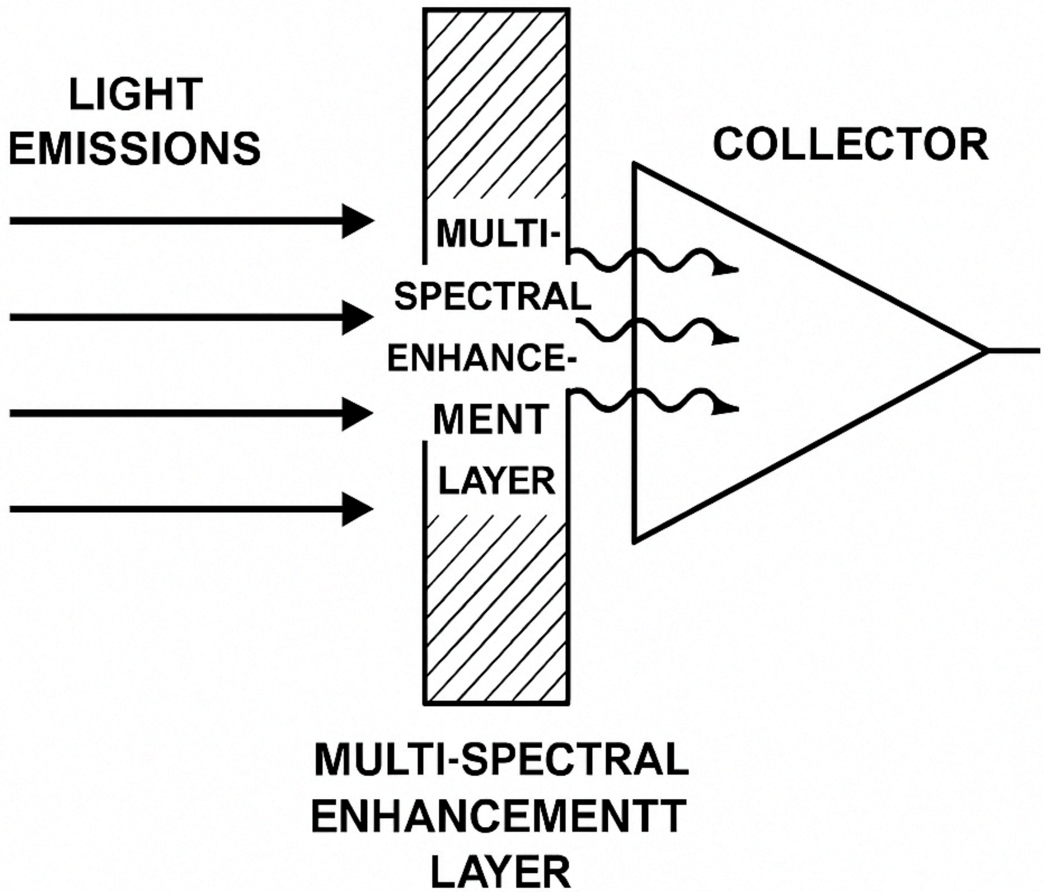

FIG. 6

- **FIG. 6** — Enhancement layer integrated

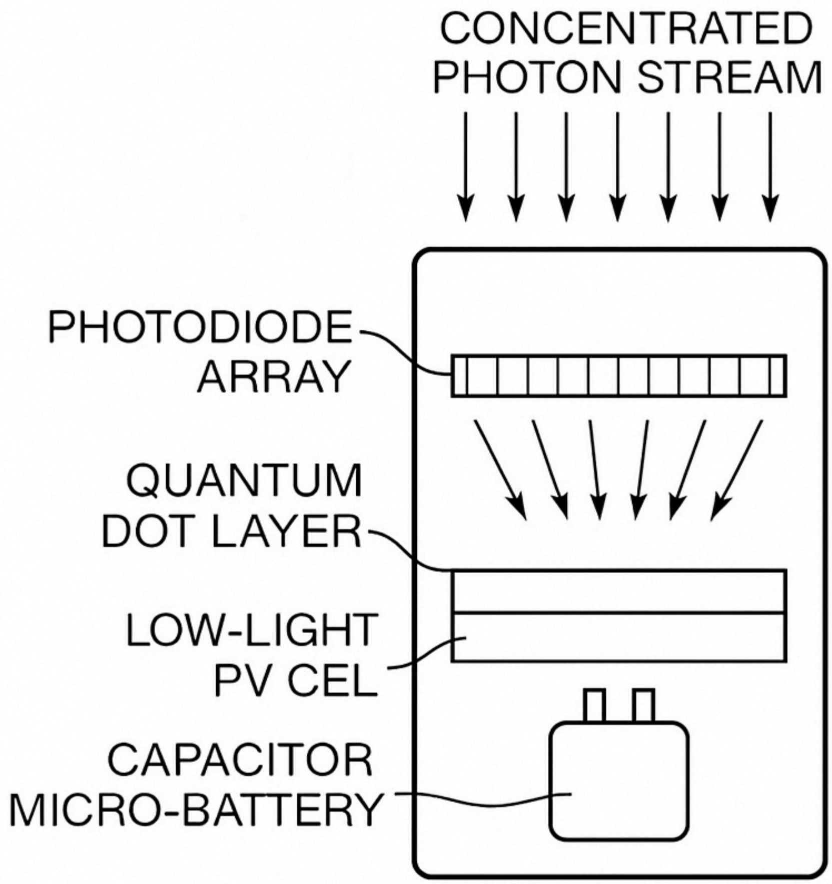

FIG.7

- **FIG. 7** — Sonic/EM combined stimulation

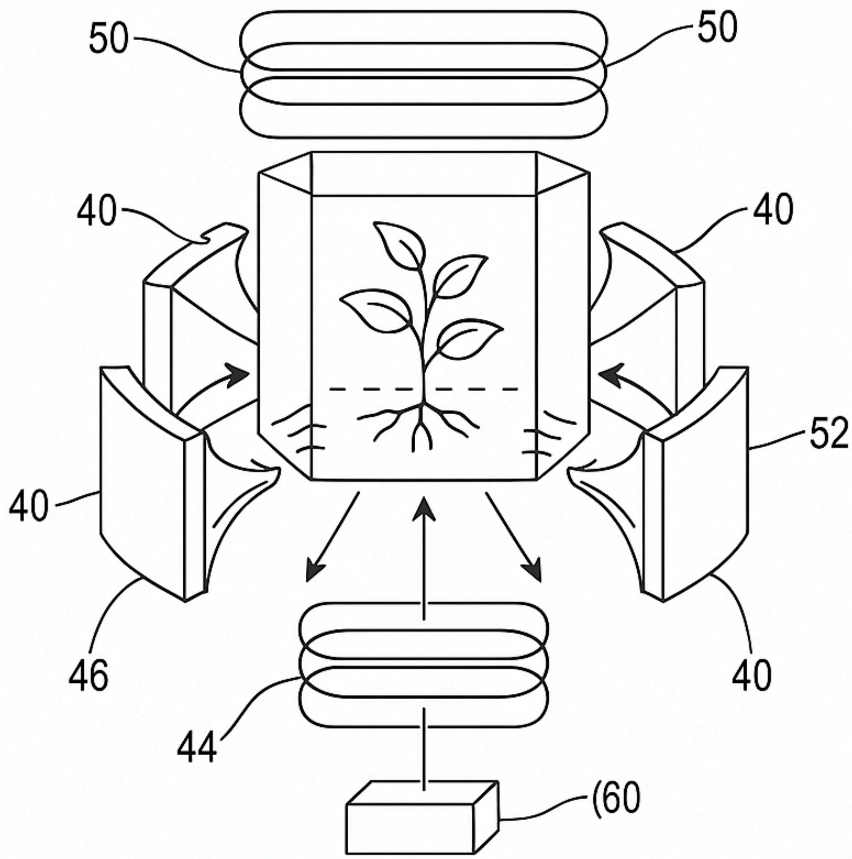

FIG. 8

Integred System Architecture

- **FIG. 8** — Integrated system architecture

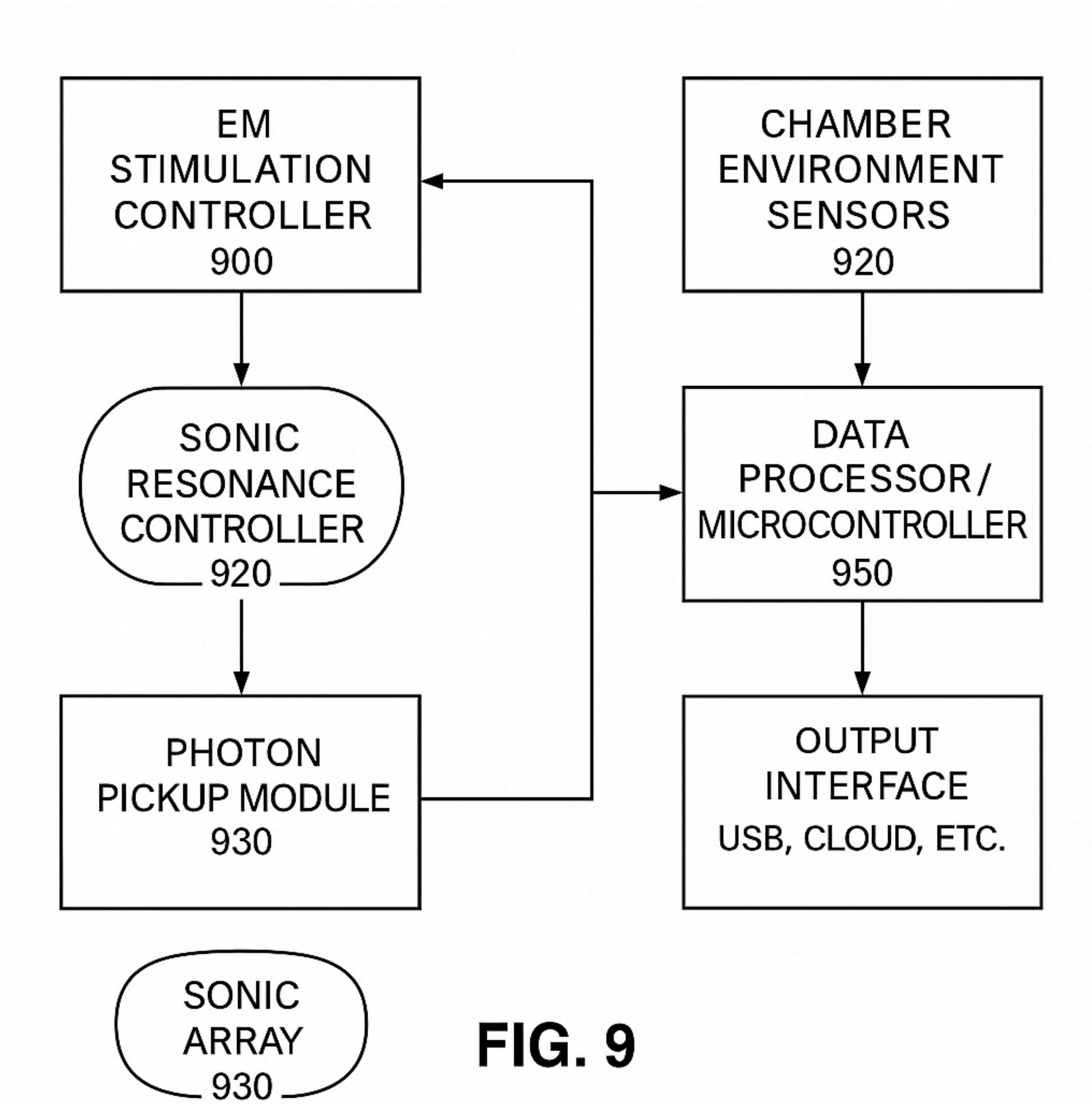

FIG. 9 — Photonic micro-energy conversion module.

- **FIG. 9 – 14** — Subsystem diagrams

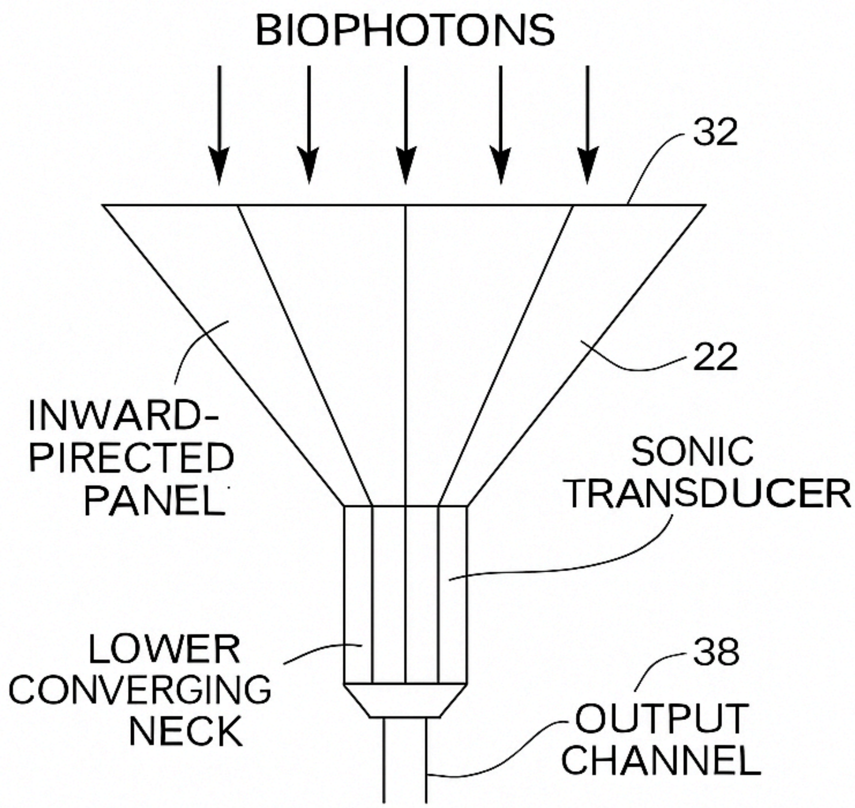

FIG. 10

FIG. 10 — Sonic resonance stimulation module.

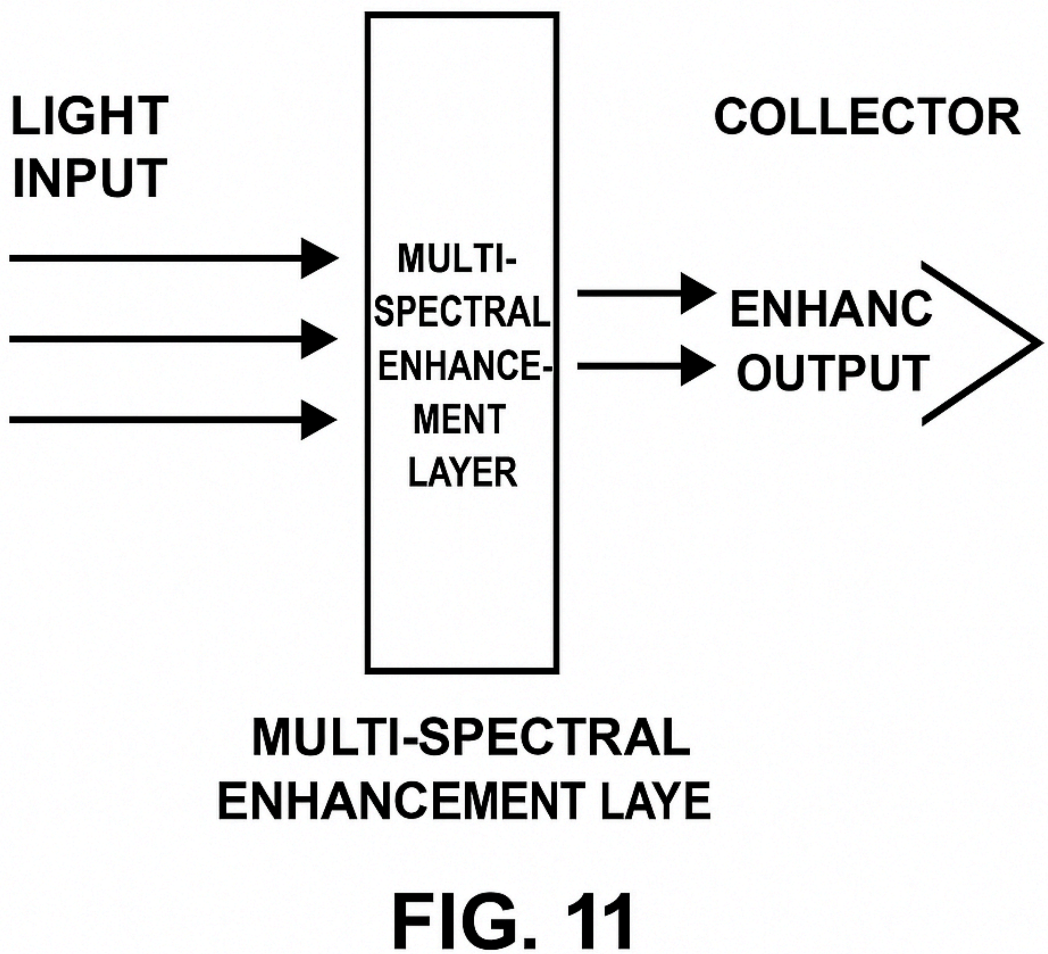

FIG. 11 — Standalone multi-spectral enhancement layer.

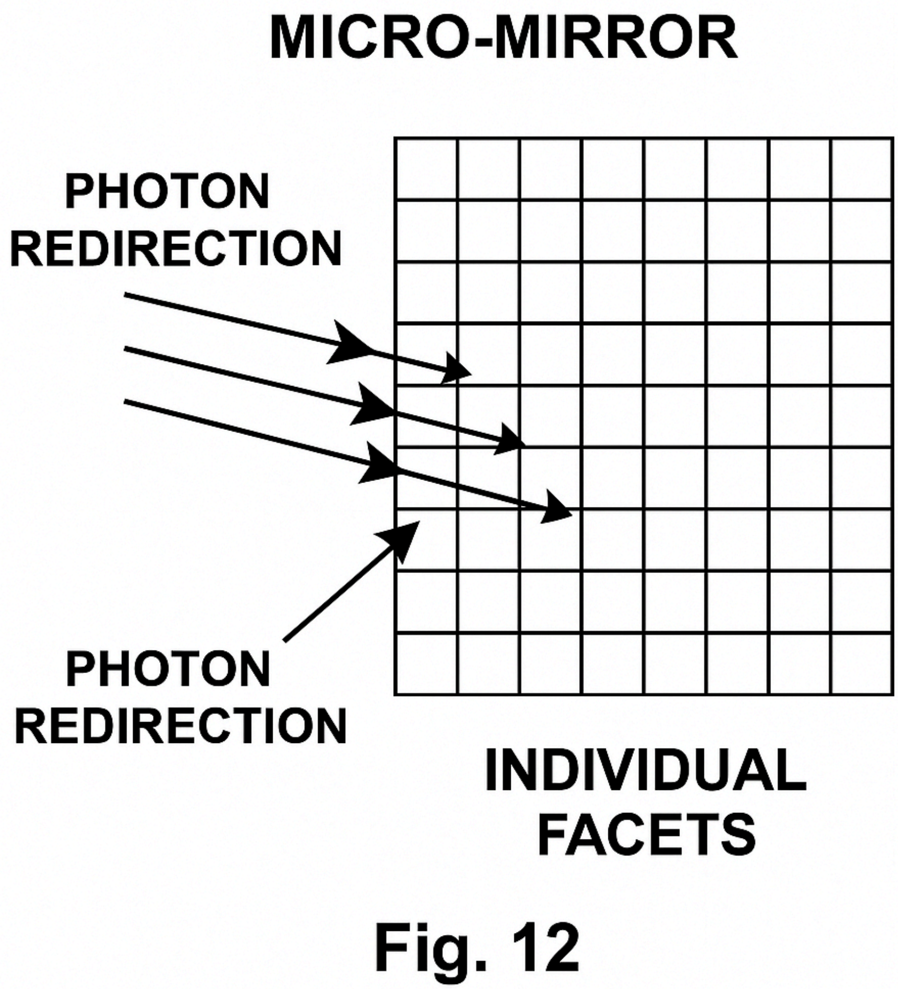

FIG. 12 — Fiber-optic light-transfer conduit.

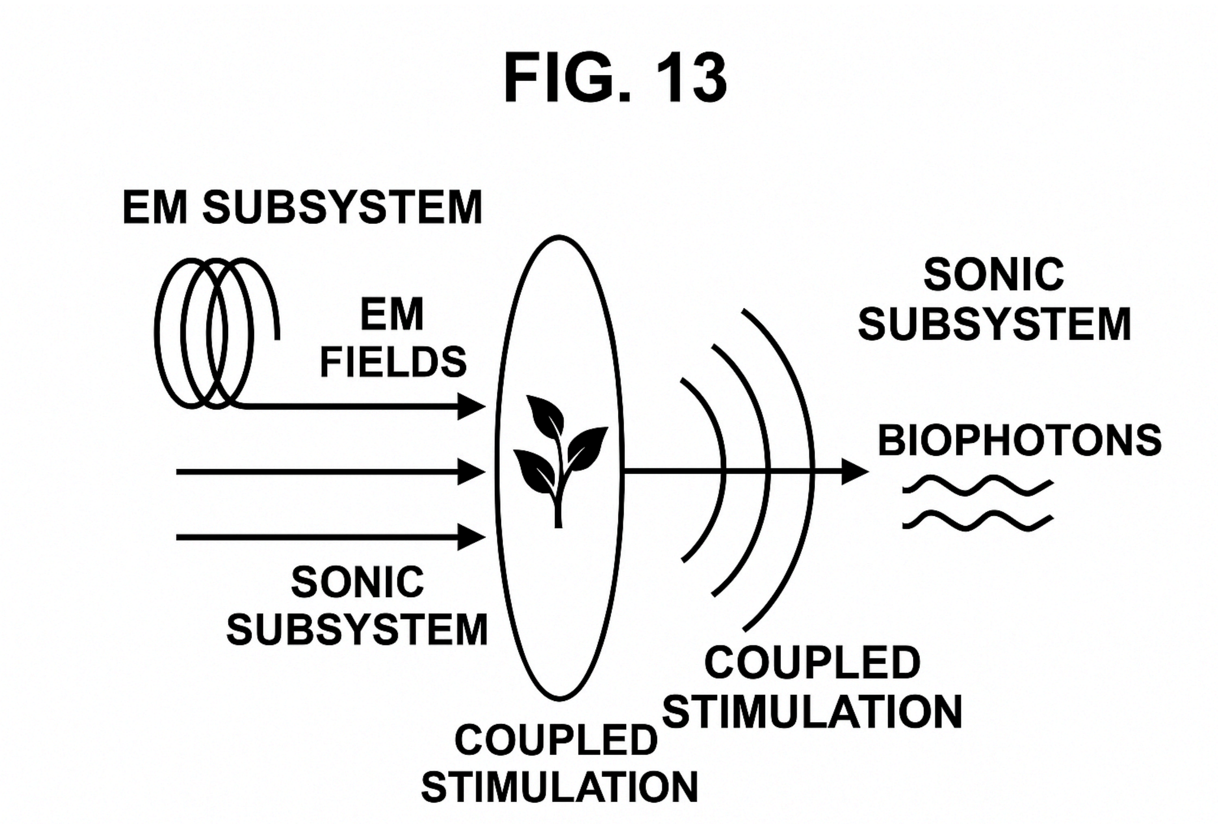

FIG. 13 — Central photon detection module.

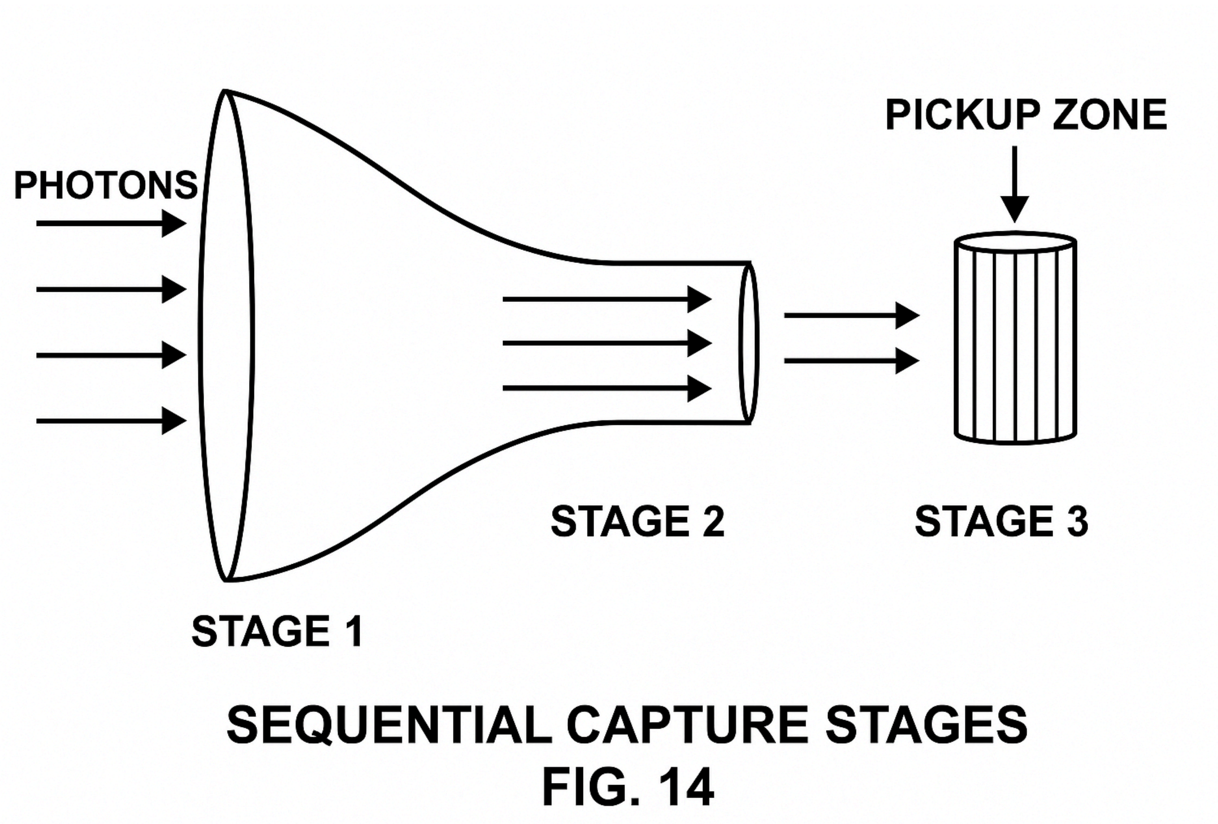

FIG. 14 — Photonic Micro-Energy Conversion Module.

VII. DETAILED DESCRIPTION OF THE INVENTION

A. Multi-Collector Array Architecture

Multiple TRIA-CORE™ collectors are placed around the biological sample. The collectors may be mounted:

- on the inside walls of a biomass chamber
- on an external circular frame
- on a removable modular ring
- on top-mounted brackets
- in stacked vertical tiers

The bottom area may remain open to allow a conveyor belt or biomass movement system.

In certain embodiments, the biological sample or biomass material is placed within a container or chamber (42) that is surrounded by inward-facing TRIA-CORE™ collector modules (40). The collectors may be mounted to the chamber walls, structural frames, or external brackets, forming a continuous circumferential array around the chamber. The bottom portion of the chamber may remain open or partially open to permit biomass movement via conveyor systems or other transport mechanisms. This configuration enables inward biophotonic capture from the complete lateral perimeter of the chamber while allowing integration into biomass-processing systems.

B. TRIA-CORE™ Collector Geometry

Each collector includes:

Parabolic Outer Funnel (10)

Redirects wide-angle emissions inward.

Conical Narrowing Stage (12)

Compresses the photon pathway.

Cylindrical Light-Piping Core (14)

Guides photons to the pickup zone.

Micro-Mirror Facet Array (16)

Enhances internal redirection.

Photon Arrows (20)

Represent inward photon flow.

An optical fiber or light-transfer conduit (38) may be coupled to the output of the cylindrical light-piping core (14). The conduit transports concentrated photons to the central detection module (44). It may consist of a single fiber, a fiber bundle, or an internal optical guide.

C. Stimulation Subsystems

Electromagnetic Stimulation (50)

Coils apply pulsed or alternating EM fields to enhance metabolic activity.

Sonic Resonance Stimulation (52)

Transducers introduce resonance that increases UPE intensity.

D. Photon Detection & Micro-Energy Conversion

A central detector (44) measures:

- flux

- spectral characteristics
- temporal emission patterns

An optional micro-energy conversion module (60) may convert photons into usable micro-power.

VIII. CLAIMS

1. A system comprising multiple inward-facing TRIA-CORE™ collectors arranged around biological material.
2. The collectors of Claim 1 including parabolic, conical, and cylindrical optical stages.
3. The collectors including micro-mirror arrays.
4. The collectors including fiber-optic conduit (38).
5. Integration of EM coils.
6. Integration of sonic stimulation.
7. Integration around a biomass chamber (42).
8. The chamber having an open or partially open bottom.
9. Multi-collector 360° inward photon capture.
10. Optional micro-energy conversion.

IX. CONCLUSION

The Lumen Extraction TRIA-CORE™ system provides a novel inward-directed photon harvesting architecture using staged collectors, stimulation modules, and central optical detection for enhanced ultraweak photon capture.