AJNA - (Aerosol Judicating Navigable Apparatus) Advancing Microbial Identification

An Innovative Photonic System Enhancing Real-time Microbial Identification & Surveillance

Pyrotech

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AJNA
Hospital Acquired Infection Monitoring

FEATURES

- Integration of Cutting-edge Technologies:
  - LASER Backscattering
  - Big Data & AI
  - Command Control
- Unparalleled Precision in Identifying and Quantifying Hospital-Acquired Infections.
- Sample Preparation Eliminated (No need for culture media, waiting times, or incubation).
- No Human Intervention Required, Minimal Training.
- Provides Early Warnings and Instant Insights.
- Portable and Compact.
- Low Maintenance, One-time Calibration.
- Low Power Consumption.
- Cloud-based Big Data Analytics and Streaming for Global Access.

Application Areas

- Healthcare and Hospital Settings
- Biotechnology and Pharmaceutical Industry
- Public Health, Disease Surveillance
- Environmental Monitoring

- **Real-Time Identification & Quantification:** Immediate insights into infection risks.
- **Remote Monitoring:** Remote monitoring from a long distance with high sensitivity and accuracy.
- **Low Detection Thresholds:** Detects at ultra-low concentrations.
- **Swift Response Times:** Accelerates identification compared to tradition.
- **Reduced Dependence:** Cuts the need for external testing.
- **Customizable Alerts:** Audible, visual alerts enhance response readiness.
- **Standoff & Remote Detection:** Ensures safety by identifying agents from a distance, reducing personnel exposure.
- **User-Friendly Interface:** AJNA's interface is designed for simplicity, facilitating easy access and data interpretation for healthcare professionals.

Strains of Bacteria monitored by AJNA Bio Surveillance

Sample	Gram Positive or Gram Negative	Size	Shape	Anaerobic or aerobic
Escherichia coli (ATCC 25922) *Escherichia coli (ATCC 35218)*	Gram Negative	2µm-long 0.25 to 1.0 µm in diameter	Rod shaped coliform bacteria	Facultative anaerobic
Staphylococcus aureus (ATCC 29213) *Staphylococcus aureus (ATCC 25923)*	Gram Positive	0.5 – 1.0 µm in diameter	Round shaped bacterium	Facultative anaerobic
Pseudomonas aeruginosa (ATCC 27853)	Gram Negative	0.5 to 0.8 µm by 1.5 to 3.0 µm	Rod shaped bacterium	Strict aerobic
Enterococcus faecalis (ATCC 29212)	Gram Positive	0.6-2.0 µm by 0.6-2.5 µm	Oval shaped cells	Facultative anaerobe
Staphylococcus hominis (H77)	Gram Positive	1.2 to 1.4 µm in diameter Appear normally in tetrads and sometimes in pairs	Spherical cells in clusters	Acidic aerobic
Bacillus cereus (BY44)	Gram Positive	1 by 3-4 µm	Rod shaped bacterium, motile, spore forming bacteria	Facultative anaerobic
Enterococcus faecium (MB224)	Gram Positive	1-2 mm	Non haemolytic bacterium	Aerobic and anaerobic

Enhanced Monitoring of Hospital Acquired Infection (HAI's)
AJNA Integrated with Big Data, ML, and AI

AJNA CATSMART BIG DATA

- **Early Detection and Response to Disease Outbreaks:** In urban areas, AJNA's continuous air monitoring detects a sudden pathogen concentration spike, triggering immediate alerts to public health authorities.
  Outcomes: In outbreaks, AJNA allows rapid response through team deployment, patient isolation, and containment. Real-time data aids resource allocation decisions.
- **Monitoring High-Risk Areas:** Within Hospitals, Using AI and data analysis, AJNA identifies unusual increases in pathogen levels, signalling potential infection clusters, and allowing timely intervention.
  Outcomes: AJNA triggers enhanced security and immediate containment, contributing to infection mapping within the hospital.
- **Pandemic Management within Hospitals:** AJNA integrates infection data with patient records, hospital resources, and supply chain information, empowering AI to anticipate localized infection surges based on epidemiological factors and historical trends
  Outcomes: AI-driven integration facilitates proactive resource allocation, temporary facility setup, timely restrictions, and efficient use of resources within healthcare facilities, especially in areas with anticipated infection hotspots.

- **Post-Pandemic Analysis and Preparedness:** Following an outbreak of hospital-acquired infections, AJNA conducts comprehensive data analysis using Big Data and AI technologies.
  Outcomes: AI uncovers patterns of the infection spread evaluates the effectiveness of containment measures, and pinpoints areas for improvement.
- **Hospital-Acquired Infection Prevention:** Post-infection analysis informs future preparedness plans, enabling hospitals to enhance early detection and response strategies.
  Outcomes: Deployment of AJNA for Hospital-Acquired Infections ensure rapid response, containment, and enhanced security, safeguarding public safety and reducing the impact on patients and healthcare facilities

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