

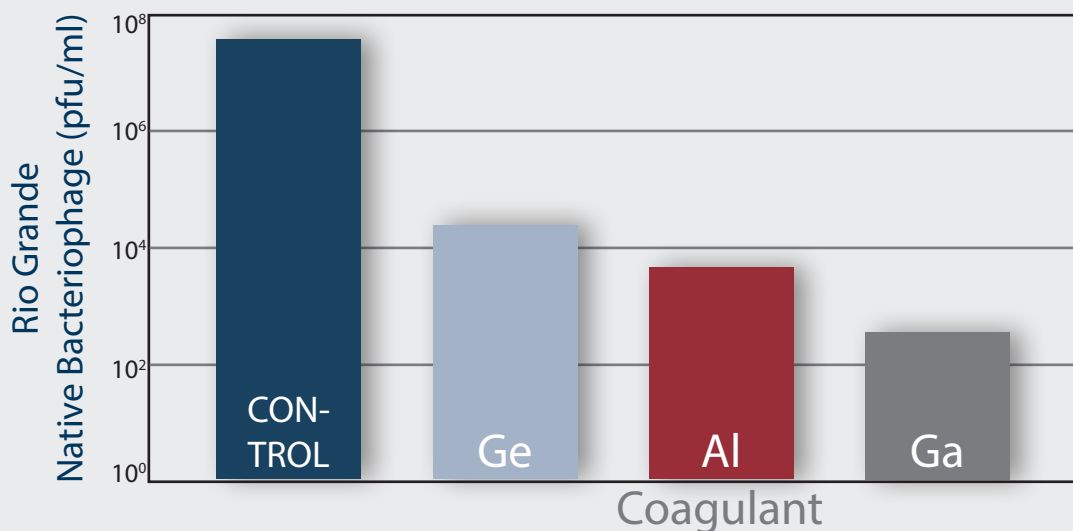
# OPTIMIZED ALUMINA COAGULANTS FOR WATER PURIFICATION

US Pat. No.: 8,119,001

Technology Readiness Level: 4

*Key elements of this technology work together in a laboratory environment*

This innovative technology uses a water treatment coagulant, or reagent, to facilitate the process of water purification. By inserting a single gallium atom in the center of an aluminum oxide cluster, the stability and efficacy of the reagent is greatly improved. This stability also provides a longer shelf life, increased effectiveness in various environments, and outperforms other current commercially available coagulants for water clarification and pathogen removal. Several significant applications of this development exist. Since water is an essential resource for daily life, a reliable supply is a necessity. However, access to clean and safe water sources can be problematic in certain populations, areas of the world, and in emergency situations. The key benefit to this technology is the efficiency of the coagulation process as a front-end treatment means less chlorinated by-products in the potable water.



Comparison of common aluminum coagulants used in water purification: germanium-aluminum (Ge), all aluminum (Al), and gallium-aluminum (Ga). The number of bacteriophage present in gallium-aluminum treated samples was significantly less than the other coagulants.

## TECHNICAL BENEFITS

- Greater stability of molecules
- Longer shelf life
- More efficient in water decontamination
- Increased performance reduces amount of disinfection by-products

## INDUSTRIES & APPLICATIONS

- Water supply
- Sewage treatment
- Emergency usage