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TECHNOLOGY NEED
Vast majority of lung cancer cases are discovered in stage 4 when the disease has spread beyond the lungs. However, only 1 in 100 people diagnosed with stage-4 cancers survive for 5 years or more. At present, targeted therapy has drastically improved the life expectancy of patients, but the delivery of chemotherapeutic agents lack specificity, leading to excessive drug accumulation to other organs and causing organ toxicity. The use of nano-medicine in targeted drug delivery system promises breakthrough advances in therapeutics and diagnostics of cancer. However, there is an unmet need to develop a combined system of targeted and controlled therapy for effective treatment of lung cancer.

INVENTION DESCRIPTION/SOLUTION
Researchers at UTA have developed a novel multifunctional dual-drug nanoparticles (MNDPs) for targeted combination treatment of lung cancer. The nanoparticle platform utilizes nano-medicine and drug delivery approaches for targeted and synergistic release of therapeutic compounds for lung cancer therapy. Inhalation delivery of MNDPs could deliver drugs directly to the lungs by significantly reducing the damage to other organs and tissues. The multimodal system will be an excellent platform to incorporate different drugs that will target specific signaling cascades to inhibit chemo/ radiotherapy resistant tumors.

APPLICATIONS
- Lung cancer therapeutics
- Healthcare: Pharmaceuticals

KEY BENEFITS
- Aerosol drug administration
- Targeted combination therapy
- Controlled and uniform delivery of drugs
- Biodegradable multimodal nanoparticle system

STAGE OF DEVELOPMENT
Pre-clinical

INTELLECTUAL PROPERTY STATUS
US Patent Application