

# System and method for providing high-detail, low-cost 3D lung imaging

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## Technology description

### MARKETS ADDRESSED:

The non-invasive assessment of lung function using imaging is increasingly of interest in the study of lung diseases. Such diseases include; chronic obstructive pulmonary disease (COPD), asthma, cystic fibrosis, pediatric chronic lung disease, and disease treatment such as lung transplant. Current imaging techniques use MRI technology; however posture-dependent images and images for patients with pacemakers or other implanted devices are not easily obtained.

Pictured above is 3D image of lungs rendered using hyperpolarized helium-3 gas and a low magnetic field.

Pictured above is the second-generation, in house construction of the low-field NMR device. This image is taken from a walk-in perspective showing the circular coils and grids used to generate the images above.

## Advantages

This technology provides a method and system for 3D human lung imaging. Images are taken using low-field magnetic resonance imaging (MRI) techniques that can be conducted with machines constructed at a cost 1/20 that of traditional MRI machines. This is a step towards overcoming traditional lung imaging costs and issues by using low magnetic fields [currently 4 mT or less] and hyperpolarized helium-3. Hyperpolarized helium-3 give extremely detailed images of lungs. Smaller magnetic fields decrease the costs associated with large super cooled magnets and allow for system architectures that allow a patient to be positioned for posture and orientation specific lung images to be taken while eliminating claustrophobic conditions.

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