MRI using hyperpolarized noble gases was introduced in 1994, and while showing extraordinary promise, has experienced a tortuous clinical development pathway. Although the elegance of acquiring rapid and non-invasive 3D images of an inhaled, noble gas, captivated many scientists and clinicians from the outset, its widespread clinical dissemination has been slower than might have been expected. Some of the impediment was readily attributed to barriers associated with intellectual property rights, poor corporate stewardship, and a challenging regulatory environment. Fortunately, these issues have now largely been addressed and $^{129}$Xe MRI has now completed phase III trials and is poised for FDA approval. With this progress we are now positioned to exploit the truly intriguing magnetic resonance properties that make $^{129}$Xe able to image all aspects of cardiopulmonary function. In this talk, I will review the basics of MRI and production of hyperpolarized $^{129}$Xe gas. I will detail the history of $^{129}$Xe MRI development, key clinical and technical milestones, as well as the commercial and regulatory progress. I will briefly discuss ongoing efforts to disseminate this technology and demonstrate its clinical value in improving the care of patients with lung disease. It is hoped the story of this journey can serve as a guide to others from the physical sciences realm who have ambitions to translate their technologies into the clinic.

Host: Dr. Brian Saam

ZOOM Information: Meeting ID: 910 2578 6983 • Passcode: physastro