



# University of Pittsburgh

ID: 3841

Featured Inventors: Blake Dube & Christopher Wilmer, PhD

## mediPOD

*big things come in little cans...*

### Value Proposition

Our product is a portable oxygen device for people with Chronic Obstructive Pulmonary Disease (COPD). Current oxygen tanks are high pressure, heavy, bulky, and dangerous; our product is a low pressure solution that is lightweight and portable. Our product makes oxygen therapy more convenient than ever before.

### Market Opportunity

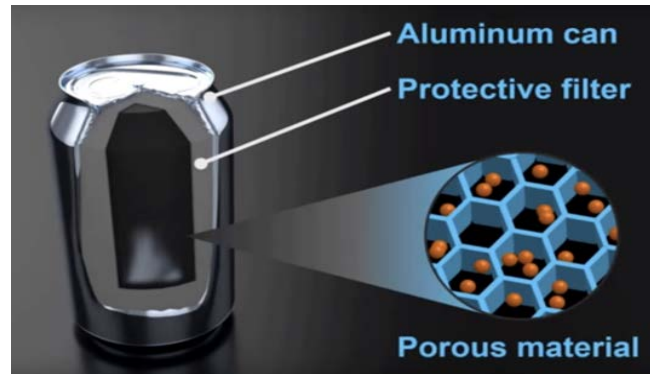
For the 24 million Americans with COPD, oxygen therapy involves heavy, high pressure tanks or expensive concentrators. A lightweight, inexpensive solution has the potential to break into the \$2 billion medical oxygen market and give COPD patients their freedom and mobility back. Customer surveys show that 67% of patients feel limited by their current oxygen system, and 93% of families and caregivers feel the burden, too. **mediPOD** is an affordable and convenient oxygen therapy, whether it's bought off the shelf and used in home, or used in the hospital setting for transporting patients.

### Competitive Landscape

Current oxygen therapy solutions involve high pressure tanks and concentrators. Pressurized tanks are heavy and bulky, often requiring a backpack, rolling cart, or even a wheel chair for transport. These high pressure cylinders can also become a safety hazard if dropped or exposed to heat. Oxygen concentrators are a potentially more portable solution, but they are noisy, limited by a power supply, and considerably more expensive than pressurized tanks. They are not covered by Medicare. There is no affordable, portable system for oxygen therapy. The low pressure design of **mediPOD** makes it safer than standard oxygen tanks, and unlocks a lightweight and portable form factor that was previously impossible.

### IP Landscape

Provisional Patent Application No. 62/315,068  
"System for portable oxygen storage and delivery"  
Filed March 30, 2016



### Technology

We use porous materials to concentrate medical oxygen in a simple aluminum soda can at low pressure. The oxygen container fits into a proprietary adapter that connects to the user's existing cannula. The adapter allows the user to adjust flow rate and view the amount of oxygen left in the device.

### Stage of Development

Our team has seen success in the *Randall Family Big Idea Competition* and the *Pitt Innovation Challenge*. We are currently developing a prototype and are participating in Blast Furnace, a student accelerator program.

### Funding

- Randall Family Big Idea Competition (\$25,000)
- Pitt Innovation Challenge (\$25,000)

# FEATURED INVENTORS:

## *Blake Dube*

Blake Dube is a 4<sup>th</sup> year undergraduate in the Department of Chemical Engineering. As an undergraduate researcher in the WilmerLab, Blake co-invented mediPOD with Dr. Christopher Wilmer. He continued to develop the product in chemical product design courses (CHE 0314 & 0414) led by Dr. Eric Beckman. Blake is a Brackenridge Fellow, as well as a Chancellor's Undergraduate Teaching Fellow, the latter of which has given him the opportunity to serve as a Teaching Assistant to CHE 0314 and develop new additions to the course curriculum. Blake led his product team to secure funding in the *Randall Family Big Idea Competition* and the *Pitt Innovation Challenge*.

### **Education**

University of Pittsburgh, Chemical & Petroleum Engineering, BASc (expected 2017)

## *Christopher Wilmer*

Dr. Wilmer is an Assistant Professor in the Department of Chemical Engineering. The *WilmerLab* leverages high performance computing tools to develop advanced materials for gas storage and separation. Before joining the University of Pittsburgh, Dr. Wilmer co-founded NuMat Technologies, a company that provides gas storage solutions for industry. He spoke at Google's "Solve-for-X" annual meeting, rang the closing bell at the NASDAQ, and was named to Forbes Top 30-under-30 list in Energy Innovation. He is excited to involve his students in the translation of academic research to real world applications.

### **Education**

University of Pittsburgh, Chemical & Petroleum Engineering, Assistant Professor 2014 – present

Harvard University, Chemistry & Chemical Biology, Postdoctoral Fellow 2013 – 2014

Northwestern University, Chemical & Biological Engineering, PhD Candidate 2007 – 2013

University of Toronto, Engineering Science, BASc 2002 – 2007

### **Publications**

1. C.E. Wilmer, M. Leaf, C.Y. Lee, O.K. Farha, B.G. Hauser, J.T. Hupp, and R.Q. Snurr, *Nature Chemistry*, 4, 83-89 (2012).
2. C.E. Wilmer, O.K. Farha, T. Yildirim, I. Eryazici, V. Krungleviciute, A.A. Sarjeant, R.Q. Snurr and J.T. Hupp, *Energy & Environmental Science*, 6, 1158-1163 (2013).
3. O.K. Farha, I. Eryazici, N.C. Jeong, B.G. Hauser, C.E. Wilmer, A.A. Sarjeant, S.T. Nguyen, R.Q. Snurr, S.T. Nguyen, A.Ö. Yazaydin, and J.T. Hupp, *Journal of the American Chemical Society*, 134, 15016-15021 (2012).

### **Innovation Institute**

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