

# **Joseph DeSimone, Ph.D.**

**Chancellor's Eminent Professor of Chemistry, College of Arts and Sciences at UNC-Chapel Hill**  
Chapel Hill, NC, US

DeSimone's research lab studies the underlying mechanisms of diseases and uses nanotechnology to engineer better treatments and vaccines.

---

## **Description**

Professor DeSimone is the Chancellor's Eminent Professor of Chemistry in the College of Arts and Sciences at the University of North Carolina at Chapel Hill, and the William R. Kenan Jr. Professor of Chemical Engineering at NC State University and of Chemistry at UNC. He is also an adjunct member at Memorial Sloan-Kettering Cancer Center. DeSimone has published over 300 scientific articles and has over 150 issued patents in his name, with over 80 patents pending.

DeSimone is one of only a few individuals to have been elected to all three of the U. S. National Academies: the National Academy of Medicine (2014), the National Academy of Sciences (2012), and the National Academy of Engineering (2005). He is also a member of the American Academy of Arts and Sciences (2005). In December 2015, the White House announced that he would receive the National Medal of Technology and Innovation. The medal recognizes those who have made lasting contributions to America's competitiveness and quality of life and helped strengthen the nation's technological workforce.

Among DeSimone's notable inventions is an environmentally friendly manufacturing process that relies on supercritical carbon dioxide instead of water and bio-persistent surfactants (detergents) for the creation of fluoropolymers or high-performance plastics, such as Teflon.

DeSimone's research group is exploring ways to harness fabrication technologies from the semiconductor industry to design high-performance, cost-effective vaccines and medicines. DeSimone and his team developed a roll-to-roll particle fabrication technology called PRINT (Particle Replication in Non-wetting Templates) in 2004.

In 2005, his research group's work led to the creation of the Carolina Center for Cancer Nanotechnology Excellence, a 10-year, nearly \$40 million initiative based at UNC's Lineberger Comprehensive Cancer Center and funded by the National Cancer Institute.

Currently, DeSimone is on leave from the university to run Carbon3D, the Silicon Valley company he co-founded. The company is focused on bringing to market a revolutionary 3-D process that enables objects to rise from a liquid media continuously rather than being built layer by layer.

---

## **Industry Expertise**

Education/Learning, Research, Advanced Medical Equipment, Nanotechnology

---

## **Topics**

Chemistry, 3d Printing, Nanotechnology, Chemical Engineering, Biomedical Engineering, Innovation

---

## **Affiliations**

Member of the National Academy of Medicine (2014), Member of the National Academy of Sciences (2012), Member of the National Academy of Engineering (2005), Member of the American Academy of Arts and Sciences (2005), Fellow American Association for the Advancement of Science (AAAS) (2006)

---

## **Education**

**Virginia Polytechnic Institute and State University**  
Ph.D. Polymer Chemistry

**Ursinus College**  
B.S. Chemistry

---

## **Accomplishments**

### **National Medal of Technology and Innovation**

Bestowed by the White House, this award recognizes those who have made lasting contributions to America's competitiveness and quality of life and helped strengthen the nation's technological workforce.

### **Kabiller Prize in Nanoscience and Nanomedicine**

Inaugural recipient of award by Northwestern University

### **Dickson Prize for Science**

2015

Awarded by Carnegie Mellon University

### **Industrial Research Institute Medal**

2014

### **Kathryn C. Hach Award for Entrepreneurial Success**

2014

### **Fellow, National Academy of Inventors**

The NAI recognizes investigators who translate their research findings into inventions that benefit society, drive economic development and improve lives.

### **AAAS Mentor Award**

2010

**Lemelsonâ€™MIT Prize**

Recipient of \$500,000 prize for invention of PRINTÂ® (Particle Replication in Non-wetting Templates) technology used to manufacture nanocarriers in medicine.

---

[Please click here to view the full profile.](#)

This profile was created by [Expertfile.](#)