

## **Sigma Xi Required Information**

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### **Position:**

Robert A. Welch Professor of Chemistry and Department Chair, Texas Christian University

### **Short Biography:**

Raised in the farmland of central Illinois, Dr. Simanek grew up surrounded by corn destined for feed or alcohol. After completing a degree in chemistry at the University of Illinois in Urbana-Champaign in 1991, he pursued graduate work at Harvard University. Following completion of his PhD in 1996 and a post-doctoral stint at The Scripps Research Institute, Dr. Simanek joined the faculty of Texas A&M University in 1998 rising to the rank of full professor and leading the general chemistry program that serviced approximately 4000 students each semester. In 2010, he accepted the Robert A. Welch Chair at Texas Christian University where he now serves as department chair and director of the IdeaFactory. As a synthetic chemist, his research pursues the use of polymers (dendrimers) for drug delivery. His book, *Shots of Knowledge: The Science of Whiskey*, was published in 2016 and has garnered praise and awards.

### **Lecture 1: "*Shots of Knowledge: The Science of Whiskey*"**

*Audience:* General public or STEM scientists

*Note:* The lecture (or lectures as desired) survey **most disciplines** of science and some engineering. This lecture can be delivered in a conventional setting or as a tasting experience for select groups (in accordance to local, state & federal law).

*Abstract:* Whiskey is interesting. It can serve as a lens through which science, engineering and history can be examined. Whiskey's creation relies on input from multiple disciplines; from agriculture and forestry to chemical engineering and biochemistry. Whether the discussion centers on bourbon or Scotch, a single malt or Canadian blend, the influences of the great ideas and great thinkers of

science and engineering shine through. Join Dr. Eric Simanek of Texas Christian University on this interactive discussion of one of the world's treasured spirits.

**Lecture 2: "Whiskey: A catalyst for social change"**

*Audience:* General public, gender studies, pol. science/history & STEM scientists

*Note:* The lecture focuses on eras in American history intimately related to whiskey with emphasis on taxation, a focus on the emergence of women's rights and roles, the political machine, and the treatment of immigrants.

*Abstract:* History and whiskey are intimately related. Through examination of selected epochs of American history, one can see parallels to the current events and conditions. Without political agenda, the talk uses historical highlights as evidence for continued evolution towards a better society from the treatment of immigrants to the increasing move towards gender equality. Join Dr. Eric Simanek of Texas Christian University for an optimistic outlook on the future and evidence for how far the country has come in the last 250 years using whiskey as a lens.

**Lecture 3: "Using Nano to Fight Cancer"**

*Audience:* STEM scientists or general public (jargon reduced; metaphor rich)

*Note:* The lecture can be tuned from generalists to specialists and traces my lab's efforts to fight prostate cancer using polymer (dendrimer) chemistry moving from basic science to successful studies in sophisticated models of disease.

*Abstract:* Nature and nanotechnology offer rich sources of inspiration for tackling the challenges of our times. Polymers continue to revolutionize our world, from the first plastics to household fabrics. Join Dr. Eric Simanek of Texas Christian University for a discussion of how his polymers, resembling trees, have been advanced to fight cancer, and the successes (and challenges) seen with some candidates in sophisticated models of disease.

**Lecture 4: "Triazine Dendrimers: Versatile Scaffolds for Medicine and Materials Science"**

*Audience:* STEM scientists weighted heavily towards chemistry

*Abstract.* Chemistries first described in the 1850s are still relevant today. The use of triazines as building blocks for the next generation of materials and medicines are examined through the lens of a synthetic organic chemist with light shined into dark corners by collaborators from a range of disciplines including chemical engineering for VOC applications and translational specialists interested in chemotherapy, infectious disease, and gene therapy.