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The Joy Of Chemistry

*This guest editorial is by **Roald Hoffmann** and **Bassam Z. Shkhashiri**. Hoffmann is a Nobel Laureate in Chemistry and the Frank H. T. Rhodes Professor of Humane Letters Emeritus in the department of chemistry and chemical biology at Cornell University. Shkhashiri was ACS president in 2012 and is the William T. Evjue Distinguished Chair for the Wisconsin Idea in the department of chemistry at the University of Wisconsin, Madison.*

YOU DON'T HAVE TO BE a chemist, a professional, to enjoy the magic of chemical transformation. To feel your heart beat faster when one innocuous-looking colorless liquid is poured into another, and a copious yellow solid precipitates, then is dissolved by a third solution. To come back hour after hour to watch a copper sulfate crystal grow. To rise on your toes, eyes glistening when a drop of water falls on a freshly hewed chunk of sodium resting passively in an atmosphere of a greenish gas. To clap your hands when the fireworks begin. To waft the garlicky gas bubbling out of a solution to your nose. To be held back from tasting that solution.

Such a person is among us. He is Oliver Sacks, who will be 80 on July 9. A friend to both of us, Oliver has written one of the two great chemistry classics of all time, the only match for Primo Levi's "The Periodic Table." Oliver's 2001 "Uncle Tungsten: Memories of a Chemical Boyhood" is a touching account of one English boy's love affair with chemistry during the mid-20th century. It is as well a beautifully written history of chemistry, with Cavendish, Davy, Bunsen, and Mendeleev as its heroes.

"Uncle Tungsten" is not a complete story of our field, for the young man grows out of chemistry just when our science reaches its exciting molecular maturity. But for the joy of color changes, stinks, and bangs, for conveying the feeling of mercury sloshing around in a sealed crock or tin weeping, nothing out there holds a candle (not even Faraday's candle) to "Uncle Tungsten."

One wishes for more of the joy and excitement of chemistry in our scientific publications, which are mostly devoid of personal expression: Just the facts, ma'am. Yet, we can emulate Oliver, as he writes not only about the chemical play of his childhood and 19th-century chemistry, but also when he deals with neurology,

his profession. We can share the curiosity that drives our searching and the joy that rewards our efforts. Pause and reflect for a moment on the artistry in the deployment of an experiment, the elegance of its probing, and the thrill of finding an answer. Chemistry is the most creative science, rearranging atoms into patterns that have never been before.

How do we do communicate this joy to people not privy to our jargon? We show them, of course. Chemistry is visual (and audible and smellable). We can show that molecular oxygen is paramagnetic by pouring the pale blue liquid over a strong magnet; the liquid sticks. We can show chemiluminescence by bubbling chlorine through alkaline hydrogen peroxide in a darkened room and marvel at the rich red glow. Chemistry delights, ignites passion, and inspires understanding! In "Uncle Tungsten," Oliver attests to the communicative power of chemical marvels.

Oliver is of course a neurologist and a writer, not a chemist. There is no one as able to discern in the abnormal the lessons for the normal. He can endow an affliction, what others would call disease or abnormality, with true dignity. Oliver's writing returns a moral confidence to the sufferer. This is his message and his gift.

The gift to us is that this remarkable man loves chemistry. If you meet Oliver, the best of our fans, at a fancy vernissage, he will be the only person there wearing a periodic table T-shirt. And he can tell you, with glee and without cracking a book, what a scientifically minded criminal might have put into the carved-out cavity of what looks for all the world like a nice, hefty Swiss-assayed gold bar.

He dreams of chemistry, our friend.
Happy birthday, Oliver!

Roald Hoffmann
Bassam Z. Shkhashiri

Views expressed on this page are those of the author and not necessarily those of ACS.