

COURTESY OF SUSAN E. MACGREGOR



NEW CAREERS, NEW COLLEAGUES MacGregor and an emperor penguin in Antarctica.

MIDCAREER CHEMISTS STARTING ANEW

In these challenging times, opportunities await those who can change direction

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CHEMISTS REINVENT THEMSELVES all the time. Sometimes they emerge in a different industry; a different field of chemistry; as a lawyer, teacher, or student; or even in a totally unrelated profession. Many times the transformation is by choice, but sometimes it is not.

Most unemployment figures are just a snapshot in time, and it can be difficult to see the personal stories behind the numbers. Charles E. Keller, a Ph.D. process chemist from Albany, N. Y., was expecting a different kind of life change recently. "I got married for the first time, and the very next month I got laid off." Keller, who lost his job after a merger, is currently working as a scientific temporary employee after a six-month stint in retail, and he is hoping to find a permanent position.

With the unemployment rate for chemists reaching 3.6%, more chemists are facing midcareer transitions today than in decades. Organic chemist and patent attorney Alex Andrus has a message for them: "Be reassured that if you have a chemistry background and education, you've already achieved academically and professionally. You've already met a very stringent test. It should give you confidence

that you can apply those skills elsewhere."

Making a major midcareer transition can be scary, exciting, exhausting, and, for many, incredibly rewarding. C&EN spoke to chemists who have faced or are in the process of facing major career change.

Susan E. MacGregor's career turned south, literally, after she had to leave a biochemistry position that she loved in a failing company. After putting her résumé on the Internet, MacGregor was contacted by a recruiter for the U.S. Antarctic Program. "They asked me what I knew about Antarctica, and I said 'I didn't even know there was any science going on down there.'"

MacGregor had gone back to college when her two sons were in high school and continued on to get a Ph.D. in bioinorganic chemistry. She knows what it means to try something different. She spent two five-month seasons as the senior analytical chemist at the Albert P. Crary lab at McMurdo Station.

When MacGregor was ready to move on, and move a bit closer to home, she benefited from her American Chemical Society contacts. A fellow member familiar

with her background alerted her to a position at Battelle Memorial Institute in Edgewood, Md. "It's a completely new field for me—working with chemical warfare analysis, destruction, and decontamination for safer, easier, and faster disposal with less damage to the environment. I really like it," MacGregor says. "Battelle is a wonderful company to work for, and they do important, interesting work."

REFLECTING ON what worked for her, MacGregor says, "I know it's a cliché, but networking is what works. Talking to the most people and following up is a huge pain in the neck and is time-consuming but worth it." She points to the ACS Chemjobs Career Center at national meetings as a good place to get your résumé to many employers.

Andrus, the patent attorney, did not consider a legal career until his company was involved in a patent dispute. The case did not end well for his employer, but the company saw in Andrus the makings of a great lawyer. "It was a great opportunity to have the company sponsor my education and mentor me in the patent business."

What did the firm see in him? "One, I was willing. Through my participation in the litigation, I showed that I was aware of the demand for and had the specific skills that were most attractive to them, in this case, organic chemistry. I was able to really understand the chemistry and relate to both chemists and non-chemists to explain and understand the invention. Writing skills were paramount, and I had written a number of papers and shown that I could communicate in writing, which is not always something chemists can do," he says.

Going to law school, however, did not play on Andrus' strengths. "What I learned

really quickly was that the analytical skills I learned as a scientist were not very useful in law school classes." Happily, he graduated and passed the California bar exam on his first attempt. Andrus still thinks of himself as a chemist. "Scientists generally are mystified as to why anyone would want to be a lawyer, and they view me suspiciously," he says. "I have to sell myself when I'm working with an inventor. I

have to convince them that I understand the invention and not be the stereotype of the lawyer. When I can keep them out of trouble, it's satisfying."

Many career transitions involve going back to school. After 20 years working in



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the chemical industry, Ph.D. chemist Mary Francis Beno, 53, attended school full time to obtain a master's degree in social work from Loyola University Chicago, which is noted for its clinical social work.

During her career in chemistry, Beno had volunteered at her local community health center. In 1990, she made a decision to change careers and go into social work. Looking back, she says, "I was working for a rapidly growing pharmaceutical company, and as things became more and more demanding, I couldn't keep both my volunteer interests and chemistry work at the same levels. In the pharmaceutical work, I was helping others, but it was a bit more removed."

Beno visited the library of her community college and started to research careers in social work. She also met with a career counselor who helped her to explore her talents, decide if the change would work, and find the best match. She decided to go back to school full time. In 1999, Beno finished her studies. She is currently a licensed clinical social worker and psychotherapist at a community mental health center in Burbank, Ill., doing therapy with individuals, couples, and families.

When applying for a job in her new career, Beno had to write a new résumé of which her volunteer work was an important part. She also had to articulate the connection between her work as a chemist and clinical social work. "I learned that both jobs rested on some of the same skills. Specifically, it's important for clinical social workers to steep in the data and hold some ambiguity, and as a chemist I understood and enjoyed that."

NEW SKILLS can help hedge one's bets in a changing job market. Alton E. McConnell, 47, has worked in the rubber business for 22 years. He likes his job at Avon Automotive in Cadillac, Mich., but he's not comfortable betting that nothing will change between now and retirement. "The problem is that this is a very mature industry," he says. "We've managed to stay in business by getting more efficient. As long as you can deliver a part that is competitively priced in the world marketplace, you do okay. If it gets to a point where you can't do that anymore, it's a problem." McConnell went back to school full time to get an M.B.A. while working at Avon.

McConnell did not have a change of heart about his career—he still considers himself a chemist. He just wanted to make sure not to get into a corner. "In all industries and for everyone, you have to look forward to decide what you want to do

next." He believes that the M.B.A. degree will give him more options in his industry: "I've always wanted to be a chemist, but I'm also a realist."

Hugh Fan, a 38-year old Ph.D. chemist, worked for eight years in the microfluidics industry for two different companies before moving into academia. He had enjoyed the higher salary offered in industry as well as the real-world applications of science, but eventually came to realize that he wanted to pursue longer term research apart from day-to-day business concerns. Around 2001, with unemployment on the rise due to the downturn in the economy, Fan figured it would be a good time to make his move.

Fan found out about an academic position through one of his article reviewers and is currently an associate professor in the department of mechanical and aerospace engineering at the University of Florida. "My thought was that engineering departments probably would appreciate my industrial experience more than their chemistry counterparts." Indeed, Fan found that "my understanding of chemical and biological applications is one of my strengths that my department appreciates. Currently, a lot of research is being performed by multidisciplinary teams; understanding both science and engineering is an asset."

When Ann-Marie Bossong, 37, was finishing her master's degree, she found herself laid off from her pharmaceutical R&D position. A good student, she was offered a fellowship to pursue her doctorate. But something wasn't sitting right with her. "I got up to the thesis work and was thinking about labs, and I kind of decided that maybe I didn't want to do this at this point in my life," she says. "It would have been very prestigious, but I opted out." Throughout her career, she had been told many times that she would make an excellent teacher, and "I thought maybe I could use my passion to teach science."

Bossong entered a New Jersey program for career changers that provided an alternative route to teaching certification. She is now the chemistry and physics teacher at Immaculate Conception High School in Lodi, N.J.

Many of Bossong's pharmaceutical colleagues have also been through upheaval

and change. "This particular transition is not for everyone. It's a lot of work. People think you have summers off and have all this free time, but you take work home, you work weekends," Bossong says about teaching. "You have to have good interpersonal skills to work with administration, parents, and students. It can be exhausting." Bossong is not looking back, however. "I would say I'll stay in teaching for the rest of my career. I really love it. You get an energy from the students, and you channel it back to them."

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Greg Schmidt is currently working toward high school teacher certification after a 20-year career in the chemical industry. He explains: "I'm still a chemist; it has been a wonderful choice and perspective for me. But a year ago, at 48, I asked

myself, 'Is this what I want to do till I retire and is this where I want to do it?' and I decided, 'No,' that this really wasn't it."

Schmidt had first gotten the notion to teach when he was working for Dow, which held summer workshops for high school teachers. Years later, when he decided to make the change, he contacted the National Science Teachers Association and the Michigan Science Teachers Association (MSTA). Both organizations expressed a tremendous need for chemistry teachers. MSTA recommended that Schmidt enroll in a program at Saginaw Valley State University that aids people with advanced degrees with the transition to teaching.

Schmidt is eagerly looking forward to completing his certification at the end of the school year and embarking on his new career. "Chemistry is a wonderful way to view and to experience the world, and teaching is a way for me to give it back. At the high school level, you can bring this richness to a student's early personal development and really impact those students for life."

As the great Yogi Berra once said, "When you come to a fork in the road, take it." To do that, midcareer chemists have learned to think more openly and to be flexible in looking at their skills overall, not just in research and science. Working in teams, logical thinking, and writing from research are strengths that many chemists share. To find a new niche, high school teacher Bossong suggests, "you need to see yourself in a different light." ■