



# Sloan Career Cornerstone Center

## Profiles of Chemical Engineers



**David Githuku**

**Project Engineer  
Procter & Gamble  
Cincinnati, OH**

### Education:

B.S. - Chemical Engineering, McGill University  
M.S. - Chemical Engineering, McGill University  
Ph.D. - Chemical Engineering, Texas A&M

### Job Description:

Project engineer who is a technology leader in rheology.

### Advice to Students:

"I would advise you, if at all possible, to get a job in the process industry as a process engineer. You get your hands dirty and you really feel you're working on the things that you learned in school."

### Video Transcript:

"I work in a central engineering organization and I really play the role of a technical consultant to all the different areas that have, that make liquids, that have liquids-related problems, be it the manufacturing of liquid products like Jif peanut butter, for example. How do you pump it and how do you mix it and cool it as you are manufacturing it in the plant? It's not a typical liquid like water so you have to consider all the different elaborate pieces of equipment."

### Interview:

Githuku: My name is David Githuku. I work for Procter & Gamble. I'm a technology leader in rheology. I have a B.S., master's, and Ph.D. in chemical engineering. My B.S. and master's are from McGill University in Canada, and my Ph.D. is from Texas A&M.

### Q: What is rheology, and how did you get interested in that?

Githuku: The word 'rheology' stems from a Greek word, 'rheo,' which means to flow. Rheology is really the science of the flow of fluids. I got interested in rheology when I took a senior elective class in my bachelor's program at McGill. We had an excellent professor of rheology and, through taking that elective course, I really enjoyed what he was teaching. That's why I decided to pursue my master's in the field, as well as my Ph.D.

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### **Q: On a day-to-day basis, what do you do?**

Githuku: The things I do as a rheologist are really varied. I work in a central engineering organization and I really play the role of a technical consultant to all the different areas that have liquids-related problems, be it the manufacturing of liquid products like Jif peanut butter, for example. How do you pump it, mix it, and cool it as you are manufacturing it in the plant? It's not a typical liquid like water, so you have to consider all the different elaborate pieces of equipment. You need an understanding of those kinds of liquid properties to design the right kind of equipment. On the other hand, when you make the final product, how does the consumer perceive the feel of this product? Is it smooth and creamy? Does it have those kinds of attributes that the consumer will like to buy? So we also measure those kinds of properties so that we can help others formulate the products better.

### **Q: How did you decide to work for a consumer products organization versus a refinery or other type of facility?**

Githuku: I like the challenge of working in a consumer products company. They make so many products that have different rheological properties that I thought that would be a real challenge. So, as opposed to working in one particular plastics area where maybe it was more narrow, I thought this would be a lot more diverse. I like the challenge of doing many different things and learning many new things. I also like working in an area where I can really see the results. I go to a store and see a product that I was involved in making or helped make. From an economic standpoint, the consumer products industry tends to be recession proof. People are always going to buy products, unlike the aerospace industry, for example, which depends on how the economy is doing.

### **Q: What long-term career plans do you have?**

Githuku: I originally come from Africa; I came to the U.S. to gain an education with the hope that one day I may eventually go back to Africa to develop industries. Procter & Gamble is a company where you can get the necessary experience. Being a global company, P&G is also opening up in Africa, so there are opportunities to go out there. Longer term, I was thinking of probably going back to Africa and developing industries in those countries, creating jobs there, and improving the lives of people there.

### **Q: What have you done since graduating?**

Githuku: After my master's, I went back to Kenya and I got a job at the Kenya Petroleum Refineries. I worked there for about three years and after that I thought, based on the kinds of things that I wanted to do to help create new industries in the country, that one way of doing it was to get a doctorate that would give me the expertise to be an industrial consultant back in Kenya. Working at the refineries gave me some industrial experience, but it didn't feel like there was an opportunity to grow and do the kinds of things that I had wanted to do. That's why I went back to school.

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**Q: What do you like most about your job?**

Githuku: I like the technical challenge. I like the ability to work with a diverse group of people to try and solve a technical problem. What's really fulfilling is when we've scratched our heads and tried to figure it out, going to the textbooks, using all the theory that we know, incorporating that with experience, and actually solving it. That is the challenge that I like.

**Q: What do you like least about your job?**

Githuku: What I like least is a lot of paperwork and red tape, filling out forms, and a lot of compliance things. I know that they're essential, but sometimes they take a lot of time away from the fun engineering things I enjoy doing.

**Q: What type of projects do you work on?**

Githuku: I'm developing what I call an expert system. I'm trying to put down the knowledge that I've gained over the five years of work in my area, put it in a computer database, and compile it so that I can distribute it to people around P&G. If they have questions about specific things related to rheology, they can go into that computer program and ask the questions themselves. They don't have to get in touch with me when I go on vacation.

**Q: Is that something that you were asked to do, or did you just decide that it would be valuable?**

Githuku: It was a combination of both. That's something I've always wanted to do-to put a lot of the knowledge down. But then I'm also looking to do other things now, because I've been doing this for five years and I want to grow in other areas. One of the requirements before they let me go is that I put it down.

**Q: Is there a professional accomplishment that you're particularly proud of?**

Githuku: I was involved in the design of a new process for manufacturing surfactant detergent paste. We were dealing with pumping some very difficult, very thick, gooey liquid. We had to pump it and I felt the conventional ways to design the equipment were not going to work. I used the theory that I had learned in school to design the system, and the people that I was working with ended up agreeing with me and we went ahead with that design. When we built the plant and started it up, it ran with almost no hitches. There wasn't any redesign or shut-down of the plant to repair anything. That was a real feeling of accomplishment.

**Q: How long had you been on the job before that happened?**

Githuku: Probably two years.

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**Q: What advice would you offer to chemical engineering students?**

Githuku: If you've taken the four or five years to get that degree, I would advise you, if at all possible, to get a job in the process industry as a process engineer. You get your hands dirty and you really feel you're working on the things that you learned in school. The good thing about the chemical engineering program is that it gives you a lot of training in working with people and computers. It's so diverse that you can do so many different things-you can go into technical sales or management, but at least starting off with getting that hands-on process experience is key to getting a handle on what the chemical engineering program's about.

**Q: Did your academic background prepare you for your job responsibilities?**

Githuku: It certainly did. I have used a lot of my knowledge, especially at my Ph.D. level, because I'm working in a highly technical field right now. I'm using a lot of the knowledge I learned in college to solve a lot of the industrial problems.

**Q: Were there any courses that you think were helpful or you wish you had taken?**

Githuku: I wish I had done more technical writing. I took one class and we didn't really have any training except that we were given assignments to write technical reports. I think that was lacking in our education. What I find is that we have to write a lot of technical memos and they have to be persuasive and convincing. That's something that probably needs to be stressed more in the engineering fields-more technical communication skills, not just the technical courses like we take.

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