Photo: Carla Sims/Sweet Lobby

Profile

This is an expanded version of the Profile that appeared in the print version of *Chemical Engineering Progress,* August 2012.

Engineering Flavors and Bridging Cultures

As the winner of a February 2012 episode of the Food Network's *Cupcake Wars*, Winnette McIntosh Ambrose, a National Institute of Health scientist specializing in vision research, demonstrated that inspired chemical engineers can succeed in any realm — when they bring the right ingredients to the mix. For McIntosh Ambrose — who is also a pastry chef and owner of The Sweet Lobby, a Washington, DC, bakery specializing in French macaron cookies and innovative cupcakes — these ingredients are not limited to the elements of her trade, but include ample measures of family influence, global perspectives, and an ineffable quantum of taste.

"My culinary perspective is heavily influenced by my upbringing, where I was exposed to a multitude of flavors," she says.

Born and raised in Trinidad and Tobago, Winnette says that her parents, despite modest means, instilled in their children a sense of possibility. "They encouraged us to be limitless in our thinking — no dream was too big or pursuit too lofty."

As a child, says Winnette, "I loved investigating how things worked, and was intrigued by biology in particular." She gravitated toward science, and at the age of 16 she won a Trinidad and Tobago national inventor competition by creating a novel line of chemical derivatives combining the best of the local coconut and urea industries. This helped her to secure a scholarship to MIT. Meanwhile, her uncle, an ophthalmologist, inspired her to "appreciate how much physicians rely on tools and technology, drugs and devices to help patients." She decided to be part of that process.

When she left Trinidad for MIT, however, baking was not an interest. "I told my mother that I simply 'would have no time to cook,'" she recalls. Only after leaving home did she realize how much her mother's cooking had shaped her palate, particular her appreciation for flavor balance. "My mother makes the most incredibly tasty meals, featuring simple ingredients and a multitude of spices and seasonings," she says.

When it comes to creativity and aesthetics in food presentation, however, Winnette credits her aunt Marlene, who in the 1960s hosted Trinidad's first television cooking program: *At Home With Marlene Fraser*. Winnette recalls, "Auntie Marlene used nuts on salads and paired cheese with fruit. As a young girl in rural Trinidad, this all seemed so exotic. So, I like to say I inherited the 'flavor' from my mom and the 'flair' from my aunt."

While doing her undergraduate work on cartilage and bone tissue engineering in Robert Langer's MIT Lab, Winnette spent time in Paris to study French. It was there that she became mesmerized by French pâtisserie, and began teaching herself how to bake. "I liked the challenge of creating my own incarnations of the works of art I saw in the shops in Paris." She has been developing her own recipes ever since.

After graduating from MIT, she got a taste of real-world biomedical engineering, working on medical implants at Guidant Corp. in Boston, MA. In 2009, she earned a PhD at Johns Hopkins Univ., where she focused on corneal tissue engineering. Today, as a postdoctoral fellow at NIH, she applies these biomaterials-based techniques to retinal reconstruction.

Still, Winnette's fantasy of making a profession out of baking remained, and in June 2011 she teamed up with her younger brother, Timothy (also an MIT chemical engineer and her *Cupcake Wars* partner), to open The Sweet Lobby bakery, near Capitol Hill. Venturing into the commercial realm, Winnette "experienced first-hand what every brick and mortar entrepreneur does: escalating costs, construction nightmares, regulatory shenanigans . . . to convert an old building in an historic district to a modern, code-compliant commercial kitchen." Despite the painful processes involved, she says, "I have no regrets."

Winnette begins a typical day by checking in at the bakery, where Timothy is the general manager. She then takes the DC Metro to the NIH lab. Most evenings, she returns to the bakery to spend time with customers. "I'm fortunate to have Timothy as general manager," she say. "My husband, Ricardo, a computer scientist I met at MIT, is also involved in every detail of the operations."

Winnette says that her engineering background influences her approach to baking, and she runs her kitchen the way one might run an academic lab. "I give each of my bakers a notebook, which is to never leave the premises," she says. "I require that they write everything down, especially when trying new recipes. I encourage methodical experimentation instead of brute force trial and error. This means careful recording of formulation and baking parameters and noting observations." She adds that much in the kitchen can be modeled mathematically, "especially some of our more labor- and technique-intensive treats like macarons."

Such rigor is evident on her *Cupcake Wars* episode, where Winnette is shown exhorting her kitchen assistants to "work fast, work neat." The program is presented as a rivalry between competing bakers, and edited to ramp up the intensity of "the world's ultimate cupcake faceoff."

In the episode, which had a Chinese New Year theme,

Copyright © 2012 American Institute of Chemical Engineers (AIChE)

Winnette wowed the judges with innovative creations, including a fresh ginger five-spice cupcake filled with a red bean mousse, topped with lychee buttercream frosting and fresh ginger caramel, and a chestnut caramel cupcake filled with black sesame pastry cream.

Pushing the envelope of flavor combinations is one of the reasons Winnette got into the food profession. One popular French macaron flavor at the Sweet Lobby features goat cheese with caramelized pear, while another combines olive oil, walnut, Pecorino cheese and white chocolate.

Visiting different countries and sampling a diversity of foods serves to broaden flavor perspectives on what is possible in the kitchen, says Winnette. "You have to master the classics, but for me it is also about building flavors and bridging cultures. It's about developing a palate that understands how flavor combinations work and taste, before you even turn on the stove."

Winnette notes that, aside from the chemical interactions that create our sensory impression of taste, each of us has his or her own unique interaction with food when it comes to appreciating visual aesthetics, textures, and flavor.

"The sense of taste is such a wonderful part of our existence," she says. "One of the privileges of living in 2012 is the accessibility to a stunning array of cultural diversity. Part of appreciating that diversity is experiencing cultures through food." She adds, "I'm a proponent of the global mix — that is, incorporating flavors from all over the world in your everyday food. This is one way to keep our taste buds from becoming saturated with 'same' and more able to truly appreciate and *taste."*

To read more about the ways Winnette and Timothy apply their chemical engineering training to running a boutique bakery, visit www.sweetlobby.com.

Copyright © 2012 American Institute of Chemical Engineers (AIChE)