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The Maillard Reaction

My name is Alex Jacob. I'm a 19-year-old college sophomore studying Computer Science. My interest in this field began in high school in my web design course. I found coding to become interesting once I pushed my first webpage onto an FTP server. Just the thought of being a developer in sites that I actively use brings me some degree of satisfaction. Being a professional developer will allow me to maintain a stable job in various fields like software development, server management, back-end development, etc. I mainly chose Chemistry because I enjoyed it over my other two choices of Physics and Biology. I had an understanding experience of general chemistry in high school. It was one of my more memorable high school classes. Now in college, I believe that being here allows me to understand a broader understanding of more fields. Although learning about more fields can allow a student to form connections between their major and such fields to a certain extent. For example, if I ever get a position at a business that has to create programs or software related to chemistry.

When I was younger, I would always wonder why a seared cut of meat would always taste better than its seared counterpart. I later learned about the Maillard Reaction from watching YouTube videos and peeking into my recommended videos. Even though it was a very basic and watered down explanation to cater to a larger audience, it was enough to get me interested. The given reaction is essentially just amino acids and sugars being broken down. This reaction

mainly occurs between 140°C - 165°C, which means that anything past 165°C is going to burn the food, and anything under 140°C won't cause any reaction. This reaction was explicitly discovered by a French chemist named Louis Maillard.

The reaction occurs due to “the carbonyl group of the sugars” in the food react with “the amino group of the amino acid.” This produces glycosylamine and water. Other chemicals within any food are a part of this that contribute to flavors and aromas. These include pyrazines that give off a nutty/roasted flavor, furanones that give off a caramel-like flavor, and thiophenes that give off a meaty flavor. However, these inorganic compounds are only accessible once you add heat via an endothermic reaction. The main aspect that I do not understand is how the chemical equation is utilized to represent this reaction and how to classify it. I will watch some videos.