

Effect of fat levels on the rheological behavior of cheese during heating and cooling

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Cheese is increasingly used as an ingredient in prepared foods to add texture, flavor and color. Therefore, texture and melting characteristics of cheese are the most important factors in determining quality of cheese for particular product application and consumer acceptability. The major components of cheese (paracasein, milkfat, and serum/water) impart structural integrity or discontinuity to cheese depending upon their relative concentration and state. The paracasein complex forms the structural network in cheese but it is interrupted by fat globules, pockets of water in young cheese, curd grain boundaries and gas bubbles in some varieties. The rheological properties of cheese are affected by composition and structural characteristics, and they undergo notable physical and chemical changes during aging. Cheese is viscoelastic in nature, i.e., the elastic (Hookean) component is attributed to the protein matrix and the viscous (Newtonian) component to the fat and serum phase. Dynamic and transient testing are the most important and fundamental methods for determining rheological properties of viscoelastic materials, and they have been used extensively to probe the structure of cheese. The consumer acceptance of many prepared, ready-to-eat foods like grilled cheese sandwiches and pizzas depends on the melting quality of the ingredient cheeses. Feedback from the cheese industry has indicated that temperature history during heating may also affect melting characteristics of reduced-fat cheeses. The objective of this study was to investigate the effect of fat on linear viscoelastic properties (dynamic and transient) of natural and processed cheeses during heating and cooling.

Biography

Ramesh Subramanian obtained a Ph.D in Chemical Engineering from University of New Brunswick, Canada in 1994, and completed postdoctoral studies at University of Wisconsin-Madison, USA (Food Engineering) and McMaster University, Canada (Chemical/Polymer Engineering). He joined Laurentian University in 2002, and currently he is the Director of Bharti School of Engineering. He has published more than 60 papers in refereed international journals and conference proceedings in the areas of chemical, polymer, and food engineering. He is a registered professional engineer in the province of Ontario, and an active member of Professional Engineers Ontario.

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