

### **434i Functional and Rheological Properties of Mexican Cheeses**

*Hee-Joon Park and Kasiviswanathan Muthukumarappan*

Mexican cheese is one of the fastest growing cheese markets in the United States. From 1996 to 2001, Mexican cheese production increased from 67.4 million lb to 102.6 million lb, which was 51% increase in 5 years. But only limited information is available on functional and rheological properties of these cheeses to establish quantitative definitions. Therefore we have performed melt profile test, texture profile analysis (TPA), stress sweep test, frequency sweep test, creep test and dynamic rheology test to characterize functional (Melting profile) property and rheological (hardness, springiness cohesiveness chewiness, elastic and viscous modulus) properties of 3 different types of Mexican cheeses. They are soft cheeses (Queso Blanco, Panela, Queso con Frutas, Queso Para Freir), semi-hard cheeses (Queso Quesadilla, Asadero, Queso Jalapeno) and hard cheeses (Anejo Enchilada, Cotija) from 3 different batches. Each property evaluation was performed on first, second and fourth month of storage. Melt profile was performed at 71°C in the oven. We measured the cheese height and temperature during the testing process. For TPA, cheese samples of 15mm (height) X 20mm (diameter) were prepared and it was allowed to reach at 20°C before testing. To measure hardness, springiness cohesiveness chewiness, 100mm/s cross head speed was used. We characterized elastic and viscous modulus using parallel plate geometry Viscoanalyzer. We conducted stress sweep and frequency sweep tests at 20°C to determine the linear viscoelastic region. From the tests, it was found that 100 Pa and 1 Hz were within the linear region and was chosen for further dynamic rheological test. The dynamic rheological tests of Mexican cheeses were performed from 30 to 70 °C. From these tests, we observed the change in viscous and elastic behavior of Mexican cheeses as a function of temperature. We found those viscous and elastic moduli were decreased with increase in the cheese age.