

# **Milk protein fractionation by microfiltration: influence of the diafiltration medium on deposit formation, filtration performance and functionality of the casein fraction**

*Dipl.-Ing. (FH) Michael Reitmaier, Dipl.-Ing. Hans-Jürgen Heidebrecht, Prof.-Dr. Ing. Ulrich Kulozik, Technical University of Munich, Chair of Food and Bioprocess Engineering, Freising, Germany*

As milk proteins differ in their nutritional und techno-functional properties, there is growing interest in obtaining and marketing separated micellar casein and whey protein fractions. For a complete separation of the two fractions on an industrial scale by means of microfiltration a final washing process (diafiltration, DF) is required. By adding a DF medium to the retentate side, the remaining whey proteins are successively transferred to the permeate side. The use of dairy processing side streams like filtration permeates or evaporation condensates instead of fresh water could increase sustainability of the process and additionally save costs. There is a lack of knowledge about the influence of these DF media on the fractionation process and product functionality. In order to determine effects of DF with different media, a characterization of potential media regarding chemical composition was conducted as a first step. These investigations revealed broad deviations in their ionic composition. An application during DF is therefore interrelated to different changes of the ionic milieu and in turn structural alterations of the casein micelles. Differences in the deposit layer formation, filtration efficiency and product characteristics are resulting from these changes.