INVESTIGATIONS CONCERNING THE SYMPLEX FORMATION BETWEEN CATIONIC STARCH AND ANIONIC POLYELECTROLYTES

Cationic starch derivatives are added to the fibre suspension in the papermaking process in order to improve dry strength and retention. To an increasing extent, process water is kept in a closed loop. As a consequence, interfering substances accumulate in this water, many of which bear negative charges. These can interact with cationic groups of starch additives and thus negatively influence their effectiveness.

Dynamic light scattering permits determination of size distributions of symplexes formed by the cationic and anionic components. In this way, a comparison of the interaction potential of various starch derivatives and anionic contaminants is possible.

Figure 1 visualises the result of an interaction experiment of lignin sulfonate and cationic potato starch (blue curve) and cationic maize starch (green curve). Only in case of the potato starch, there is a fraction of symplexes bigger than 1000 nm.

Cationic potato starch interacts more strongly with carboxymethylcellulose than with lignin sulfonate (Figure 2).

Fraunhofer Institute for Applied Polymer Research IAP

Science Park Potsdam-Golm
Geiselbergstr. 69
14476 Potsdam-Golm

Contact

Dr. Erik Wischerhoff
Phone +49 331 568-1508
erik.wischerhoff@iap.fraunhofer.de

www.iap.fraunhofer.com