Foams are non-equilibrium dispersions of gas in a foaming solution, containing typically surfactants as stabilising agents. Even though foams have been subject of intensive investigations over the last few decades, many important questions related to their stability remain open. This concerns in particular foams containing mixtures of surfactants, creating synergy effects which are strongly exploited in a wide range of industrial applications. In order to gain a deeper understanding of these synergies, we have chosen to work with a model surfactant system, which consists of two commonly used non-ionic surfactants: a sugar-surfactant \( n \)-dodecyl-\( \beta \)-D-maltoside (\( \beta \)-C\(_{12}\)G\(_2\)) and hexaethyleneglycol monododecyl ether (C\(_{12}\)E\(_6\)) as well as their 1:1 mixture \([1, 2]\). Our measurements aim at studying foam properties such as foamability (generating power of a surfactant solution), foam stability (decay of foam as a function of time) and foam drainage (change of liquid fraction in the foam because of gravity). The study was carried out with the commercially available FoamScan which uses image analysis and conductivity measurements to monitor the foaming behaviour. In addition, the bubble sizes and bubble size distributions were analysed with the new Cell Size Analysis (CSA) function, which, in turn, allows for a visualisation of the destabilizing processes, namely Ostwald ripening, coalescence and drainage \([3]\). We will present the influence of the composition (\( \beta \)-C\(_{12}\)G\(_2\):C\(_{12}\)E\(_6\) = 1:0, 1:1, 0:1) and of adding an electrolyte on the foamability and foam stability. Furthermore, the time evolution of the bubble size will be presented and discussed (Figure 1). First results indicate that the much lower stability of C\(_{12}\)E\(_6\) is indeed reflected in a much more pronounced coalescence.

Figure 1: FoamScan photograph of one layer of \( \beta \)-C\(_{12}\)G\(_2\) (10 cmc) at time 0 s, 100 s and 200 s.