TITLE FACTORS CONTROLLING THE FILM FORMATION OF NATURAL RUBBER LATEX
AUTHOR RUTTAPOOM KALAH
DEGREE MASTER OF SCIENCE PROGRAM IN POLYMER SCIENCE AND TECHNOLOGY
FACULTY FACULTY OF SCIENCE
ABSTRACT Film formation of NR was studied using atomic force microscopy to elucidate the topology of film. Effects of non-rubber components, which are proteins-lipids membrane, and difference size of NR particles on film formation process were investigated in this work. The coalescence of untreated NR particles appears to be hindered by the membrane of non-rubber components, forming a rough film that retains the topology of individual particles. On the other hand, the treated NR, which was removed non-rubber components by deproteinization and saponification reaction showed coalescence between particles more rapidly, forming a smooth film. Moreover, the effect from rubber particle sizes showed that large rubber particles formed the rough film with visible individual particles. On the contrary, small rubber particles formed the smooth film readily. The observation of roughness (Ra) of NR film showed that the treated NR and small rubber particle film showed more decreased in Ra value with increasing storage times than that of untreated NR and large rubber particle. The effect of storage time for keeping latex on stability and film formation showed that the stability of NR decreased with increasing storage time. The untreated NR latex showed lower decrease of stability than that of treated NR latex due to the effect from non-rubber components. The different types of surfactants, i.e. anionic and non-ionic surfactant, were used to stabilize the treated NR latex in order to observe the effect of surfactant on film formation. It was found that anionic surfactant perform electrostatic charge effect even in the dry film, confirmed by AFM topology. It was clear that the film of anionic surfactant appeared more individual NR particle and showed higher Ra value than that of non-ionic surfactant. Finally, it could be concluded that particle sizes, non-rubber components, storage time for keeping latex and types of surfactant are influence to film formation process of NR.