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LATEX FILM FORMATION IN ENVIRONMENTAL SCANNING ELECTRON MICROSCOPE

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Environmental Scanning Electron Microscopy (ESEM) offers the possibility to image specimens in their natural 'wet' state without the need for protective coating. The technique has been successfully used in the study of a number of materials and dynamic processes, including latices and film formation. Latex, which is an example of a wet insulating material, and is commonly used for the production of architectural coatings, has recently been the subject of extensive research, due to the future implementation of the stringent EU and DEFRA requirements for minimization of the content of Volatile Organic Compounds (VOC) used.

The aim of this talk is to present the recent advances in the application of ESEM in the study of latex film formation. The principles of the technique, together with the specific conditions required for imaging 'wet' specimens will be outlined. This will be followed by a presentation of the results for the film formation mechanisms of a number of different latex formulations, including a new acrylic latex, stabilised with a novel polysaccharide, derived from agricultural waste, which offers an alternative way for the production of VOC-free latex paints and also exhibits different film formation mechanism. The effects of addition of hard particles (e.g. TiO_2) on the observation of film formation will also be discussed. A final consideration is given to the future developments and applications of ESEM to latices and colloidal systems in general.