



## FOAM PROCESSING OF HMS-PP/CLAY NANOCOMPOSITES IN CONTINUOUS FOAM INJECTION MOULDING SYSTEM

Subhendu Bhattacharya<sup>1</sup>, Rahul K. Gupta<sup>1</sup>, Sati. N Bhattacharya<sup>1\*</sup> S.N.Maiti<sup>2</sup>, Anup Ghosh<sup>2</sup>

<sup>1</sup>Rheology and Materials Processing Centre (RMPC) School of Civil, Chemical and Environmental Engineering RMIT University, Melbourne, Australia and <sup>2</sup>Centre for polymer science and engineering (CPSE) Indian Institute of Technology, Delhi, India

\*Corresponding Author: [sati.bhattacharya@rmit.edu.au](mailto:sati.bhattacharya@rmit.edu.au)

HMS-PP/clay nanocomposites (PPNC) containing 2, 4 wt % cloisite 20A (clay) were prepared in a twin screw extruder. The samples were then foamed in a continuous foam injection moulding machine. The effect of process parameters like gas concentration, injection pressure, pressure drop, holding time, and quench temperature were studied experimentally. A L9 orthogonal DOE approach was used to determine optimum process parameter ranges for generation of uniform cell structure. It was found that the addition of clay caused a reduction in the foam cell sizes. This effect can be attributed to the improvement in melt strength and nucleation rate due to addition of clay particles. Also the foam cell structure and skin thickness of the moulded samples were very sensitive to injection pressure and holding time.