

## PRESS MOLDING SIMULATION OF THERMO-PLASTIC RESIN REINFORCED BY CARBON NANOFIBER

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### ABSTRACT

In the present study, press forming of the resin-based composite is investigated by numerical and experimental process. The composites are made by a twin screw extruder for mixture process of resin pellets and CNF powder, and a injection molding machine to obtain the test specimens, where vapor grown carbon fiber VGCF and polycarbonate PC have been employed for the filler and matrix, respectively. One dimensional compression tests were applied to estimate creep functions of the composites in the several temperature environment[1]. The creep functions are transformed into relaxation functions using Duhamels convolution integral low according to the linear thermo-viscoelastic theory. The effect of the temperature is converted to the reduced time which is estimated by shift factor defined by Narayanaswamys equation. Finite element analysis has been carried out to simulate the press forming process with V-shape die based on the thermo-viscoelastic theory[2]. The profiles of the press-formed specimens are compared with those obtained by experimental pressing tests. The characteristic feature for the press forming of the PC/CNF composite are investigated from various perspectives.

### REFERENCES

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