

Eco-friendly plastic foams

Researchers at Ohio State University, the United States, have devised a process to make dense plastic foam with considerable potential to replace solid plastic. Prof. L. James Lee *et al.* unveiled the dense new foam material reinforced with tiny clay particles at the Materials Research Society annual meeting in San Francisco. The nanocomposite plastic foam would be lighter than current nanocomposites made from solid plastics. Moreover, it would be strong enough to replace solid plastic in structural applications such as car or aircraft panels. The new foam is produced by injecting gases, specifically CFCs, into hot liquid plastic. The gas forms bubbles to plump up the mixture, which then solidifies inside a mould. When the gas bubbles are small, they spread evenly within the material, resulting in stronger and denser foam. With a foam that contained 5 per cent clay particles, the team created boards that were only two-thirds thick as typical foam, but offered comparable physical properties.

The team has also developed innovative manufacturing techniques to eliminate the use of CFCs in foam production. They produced high-quality foam by heating carbon dioxide under pressure (120°C at 1,200 psi), until it became what is known as supercritical fluid. Such fluids behave like both a gas and a liquid. *Contact: Prof. L. James Lee, Ohio State University, the United States. Tel: +1 (614) 2922 408; E-mail: Lee.31 @osu.edu. (Website: www.osu.edu)*