

eMuscle: Auto-Fitting Shape Memory Smart Materials

ASTRI's eMuscle materials deliver precise shape memory transition temperature (from body temperature to 80°C) via molecular design. Available as elastomers, foams or fibers, they customise to product needs while offering advanced shape fixation, shock absorption, energy dissipation, and 3D deformation capabilities – pioneering applications for smarter, more flexible solutions and offering advanced solutions for everyday challenges.

Industry Challenges

- Traditional polymers maintain a fixed, rigid shape after moulding, making alterations difficult without damaging the product
- Modifications require expensive remoulding or external auxiliary equipment, resulting in poor efficiency and practicality
- Conventional support and cushioning materials fail to deliver both comfort and impact resistance simultaneously
- Limited adaptability restricts application across diverse industries and use cases

Major Benefits

- eMuscle materials feature tailored shape memory thresholds, enabling stretch-induced 3D deformation with heat-triggered recovery
- Electrically integrated designs allow rapid softening and fixation, offering groundbreaking adaptability in medical, sports, and consumer products

Application Areas

- Interactive smart toys
- Adjustable rehabilitation devices
- Smart sportswear with comfort and protection

Collaborator(s)

Manufacturers of toys, garment and related products

Award(s)

R&D 100 Awards,
International Exhibition of Inventions Geneva



ASTRI's eMuscle, a smart shape memory material, is ideal for toys, rehabilitation fixation, and more

