

Smart Protection Materials

ASTRI's smart protective material is a non-Newtonian material with outstanding advantages, including high protective performance, lightweight flexibility, resistance to heat and cold, and low cost. Through extensive collaboration with Hong Kong's industries, ASTRI has developed a series of high-performance protective products such as safety gloves, bicycle helmets, smart floor mats, sports bandages, shock-absorbing underwear, hip protector, and automotive crash bollards, some of which have been successfully commercialised.

Industry Challenges

- Rigid materials can withstand strong impact but lack flexibility, while softer alternatives are often bulky and impractical
- Conventional materials typically serve a single function and cannot dynamically adapt to varying impact conditions

Major Benefits

- **Smart Protection:** Features non-Newtonian properties, self-adjusting and strengthening upon variable impact
- **Optimised Performance:** delivers effective impact protection while maintaining comfort
- **Versatile Compatibility:** Integrates with diverse materials across multiple product forms
- **Cost-efficiency:** cost-effective solution meeting international protection standards

Application Areas

- Personal Protection
- Sports Protection
- Occupational Safety Protection
- Elderly Care
- Road Safety

Collaborator(s)

Manufacturers of textiles, apparels, and smart protective wear technology

Award(s)

R&D 100 Awards, Edison Awards,
International Exhibition of Inventions Geneva



ASTRI's smart protection materials have been applied in smart floor mat and gravity free bra

