

Intelligent Materials

Materials have been static for the past of human history, soon that may not be the case. We have interactive media emerging, but usually this is confined to specific media devices designed to be interactive. These devices are tailored for humans to use, but this tailoring has oddly not extended to materials used in our everyday environment. Why save tangibility for devices exclusively modelled for on-the-go usability, why not tailor tangibility for everyday environments such as the materials used in our surroundings. With upcoming technologies such as 3D printing and microscopic design we can begin to shift the material paradigm.

Materials by nature are static, essentially enforcing designers to compromise desired functionality for available materials. This not only limits aesthetic choices but functionality. If a designer needs flexibility and durability they may choose wood, but if that material needs to be water resistant wood is not a great option. How will we overcome this in the future? Intelligent materials. Intelligent materials seek to altering the microscopic physical surface of a material rather than altering the chemical properties, as Sharklet Technologies did when they introduced a material designed to mimic the sharks naturally anti-microbial skin micro-textures.

Additionally, 3D manufacturing (via 3D printing technologies) are redefining how we construct. 3D manufacturing used to be limited to special printing plastics but has been adapting to print biological materials such as organs. This new technology allows us to create intelligent materials through two main channels. If one is printing a new material, such as biological organs, we are given the freedom to create something so microscopically complex it has been hitherto noncraftable. This will open doors to adaptive materials such as self-healing polymers, adaptive structures for organic use in humans, machine-biological compatible materials, etc. Even if one is simply modifying the microscopic constituents of an established material such as plastics, the level of

control emerging technologies give us allows us to create a material that is more than the sum of it's parts. A material is no longer just it's inherent properties on an atomic level, by creating minute structures, such as the shark textures mentioned above, one can create an entirely new property in a material. It may even be possible one day to modify atomic properties to suit a designers need in their intelligent material.