



axel ritter

smart materials

in architecture, interior architecture and design

birkhäuser

art

There are many instances of the use of special, new and innovative materials, products and smart material applications in the field of art. It is not unusual for artists, with their sensitivity, their feeling for social issues, individual analysis and pleasure in experimentation, to search out interesting methods of expression not previously exploited.

COLOUR-CHANGING ART USING SILVER NITRATE SEMI-SMART MATERIALS

By the start of the 1970s, the German artist Sigmar Polke was already experimenting and painting with materials that were capable of changing themselves. In several of his earlier pictures he used various photographic materials such as light-sensitive silver nitrate, which turns black over time when subjected to light. This process was not reversible. For Polke the autonomous creation of these pictures was an interesting phenomenon, because he could not foresee at the outset what the final effects would be (after [2]). In addition to non-reversible silver nitrate the artist also experimented with reversible, temperature- (see thermochromic/-tropic materials (TC, TT) p.80) and moisture-sensitive paints.

COLOUR-CHANGING ART USING COBALT CHLORIDE PAINTS SMART MATERIALS

For the XLII Biennale in Venice, Italy, in 1986, Polke covered the inside of the conch on the pavilion of the Federal Republic of Germany with a hygro-/hydrochromic paint consisting of a water-bound cobalt chloride solution. The paint changed its colour, depending on the degree of air humidity, from lavender-blue (unsaturated state) through purple and rose-red on to red (saturated state).

LIGHT-EMITTING ART USING PHOSPHORESCENT PAINT SMART MATERIALS

The *Schattenwand mit Blitzelektronik* completed by the German artist Konrad Lueg in 1968 is a very early artistic work in which phosphorescent paint was used. When triggered by a flashgun, the three-part, 200 cm x 341.50 cm screen was excited and phosphoresced. If objects or people passed between the screen and the flashgun, they would remain as shadows for a moment.

Phosphorescent materials still inspire a great number of artists to use them for paintings and installations. Phosphorescent paints do not always have to be applied over the whole of a surface. This is shown by the installation *Tips*, set up in 1998 by the New York artist Sharon Louden. For her installation, Louden used steel wire to weave an enormous number of suitably treated dental cotton plugs into a three-dimensional carpet-like texture, an idea that could conceivably be adapted into a facade design. Under light, the 150 cm x 400 cm installation looks like a soft, white carpet with yellowish and black inclusions; in the dark the black parts disappear and the impression is one of a luminating meadow.



Hygrowall: right half of the conch with applied hygro-/hydrochromic paint in the unsaturated state (lavender-blue) and the almost saturated state (rose-red). | *opposite: Tips*: overall view by day and at night. | Close-up photograph by day and at night.

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Sharon Loudon on installation