Medical Balloon Trick

Take a typical promotional balloon, one with “Eat at Joe’s!” or some other text printed on it. In the balloon’s unblown-up state, the printing is small and dark. As you blow air into the balloon, however, the text gets bigger and lighter, as the ink particles attached to the rubber move apart from one another.

Something like this process, though in reverse, has been used by chemical engineers at North Carolina State University to make a durable, water-resistant low-friction coating that may one day have applications in medicine or industry.

The researchers, who reported on their work in the journal Science, attached fluorinated molecules (the same kinds commonly used in nonstick coatings for cookware) to an elastic polymer film.

The trick, however, involves stretching the film first, before attaching the molecules. Then when the polymer shrinks back to its normal size, the molecules are tightly packed against one another, giving the material a much greater density and stability than would normally be the case.

The result is a flexible, water-repellent coating that, if further research bears out the feasibility of the process, could be used as a marine sealant, an airplane coating to eliminate icing or to improve the compatibility of medical implants.