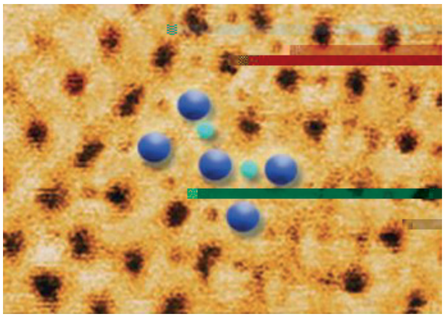
SOLUTE STRENGTHENING

How to pin a screw

Science **347,** 635–639 (2015)



AAAS

in situ

JP

SUPERCONDUCTIVITY

Switched by light

Science **347,** 743–746 (2015)

L

DC

OPTICS

Flat lenses

Science http://doi.org/2mn (2015)

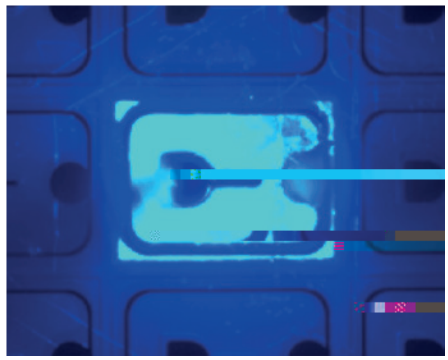
L

MM

GALLIUM NITRIDE GROWTH

A 2D barrier to defects

ACS Appl. Mater. Interfaces **7,** 4504–4510 (2015)



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METAL-ORGANIC FRAMEWORKS

Crystals and chains

Angew. Chem. Int. Ed. http://doi.org/f26btc (2015)

The processing of metal–organic framework (MOF) powders into specific macroscopic shapes can be achieved by applying mechanical pressure, by using extrusion methods or by the inclusion of additives and binders. Now, Xiao Feng, Bo Wang and colleagues report the formation of elastic, stand-alone membranes of MOF crystalline powders in which polymeric chains covalently join the crystals together. Nanoscale crystals of a MOF — UiO-66-NH_2 — are modified with methacrylamide groups, and then mixed with the monomer butyl methacrylate and a photoinitiator to form a suspension that is dropped into a Teflon mould. Irradiation of the mixture with ultraviolet light induces polymerization resulting in a MOF–polymer hybrid membrane, which is flexible and can be easily peeled away from the mould. The mild conditions of the photopolymerization step allow the MOF nanoparticles to retain their crystallinity producing homogeneous, crack-free membranes that have good abilities to separate heavy-metal ions, such as Cr^{VI}, from water. This method could be used for a range of MOF crystals and to prepare many differently shaped hybrid materials. *AS*

Written by David Ciudad, Maria Maragkou, Luigi Martiradonna, John Plummer and Alison Stoddart.