Azo-based photoswitches show promise as molecular solar–thermal (MOST) materials due to their ability to store energy in their metastable $Z$ isomeric form. The energy is then released, in the form of heat, upon photoisomerization to the thermodynamically stable $E$ form. However, obtaining a high energy density and recovering the stored energy with high efficiency requires the materials to be employed in the condensed phase and display a high degree of $Z$ to $E$ switching, both of which are challenging to engineer. Here, it is shown that arylazo-pyrazole motifs undergo efficient redox-induced $Z$ to $E$ switching in both the solution and the condensed phase to a higher completeness of switching than achieved photochemically.

Arylazopyrazole motifs undergo efficient redoxinduced $Z$ to $E$ switching in both the solution and the condensed phase to a higher completeness of switching than achieved photochemically.