Photoluminescent properties of many solid materials are known to be changed by a mechanical stimulus such as grinding, pressing, or ball milling. These compounds are recently attracting much attention. We previously reported the first reversible luminescent mechanochromism of a gold isocyanide compound in 2008.[1] We further reported that other isocyanide complexes show the first molecular-domino phenomena. Applying small mechanical stress to a small area on a crystal induces the single-crystal-to-single-crystal phase change of the whole crystal.[2] The new phase displays the different photoluminescent properties caused by the new crystal structures. Installing 4-perfluoropyridyl group gave a new material with multiple response abilities to stimuli including grinding and solvent addition. The introduction of triethylene glycol methyl ethers also gave a new mechanochromic material with crystal-to-crystal transformation mediated by a short-lived transient amorphous phase. Based on the screening method, we found a new photosalient compound, which jumps after irradiation of a strong ultraviolet light.[3] By changing the substituents, we synthesized new 48 different complexes. Screening revealed that 26 new compounds show mechanochromism including crystal-to-amorphous transitions, and two compounds represent crystal-to-crystal transitions.


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