

EES Catalysis

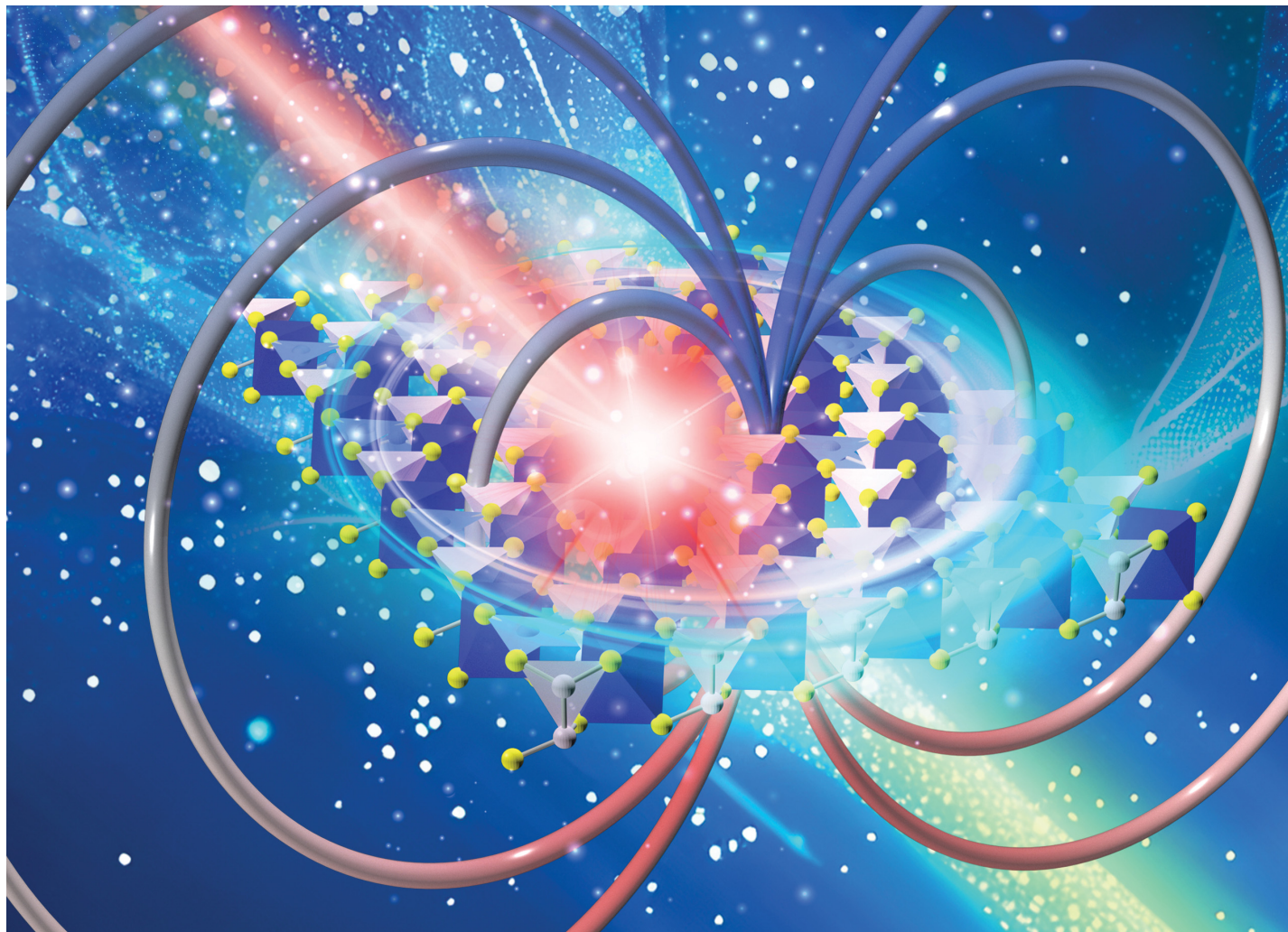
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Elemental answers**

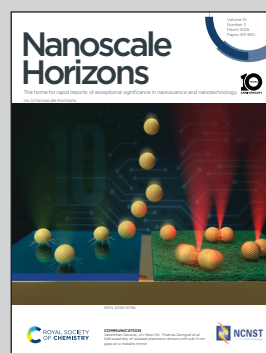


**Showcasing research from Dr Linglong Li's laboratory,
School of Physics, Southeast University, Jiangsu, China.**

**Tunable magnetoelectricity and polarity in van der Waals
antiferromagnetic $\text{CuCr}_{1-x}\text{Fe}_x\text{P}_2\text{S}_6$**

We report the impact of iron doping on the magnetic and nonlinear optical properties of $\text{CuCr}_{1-x}\text{Fe}_x\text{P}_2\text{S}_6$ (CCFPS) samples, a van der Waals material with antiferromagnetic (AFM) and antiferroelectric (AFE) characteristics. Results show that doping affects the Néel temperature (T_N) while preserving the AFM state. For doping concentrations $x < 0.5$, magnetic-dielectric coupling and second harmonic generation (SHG) were observed, with an odd-even dependence indicating interlayer symmetry-breaking. These findings enhance understanding of two-dimensional multiferroic materials and guide future magnetoelectric coupling design.

As featured in:



See Shuai Dong, Linglong Li *et al.*,
Nanoscale Horiz., 2025, **10**, 561.