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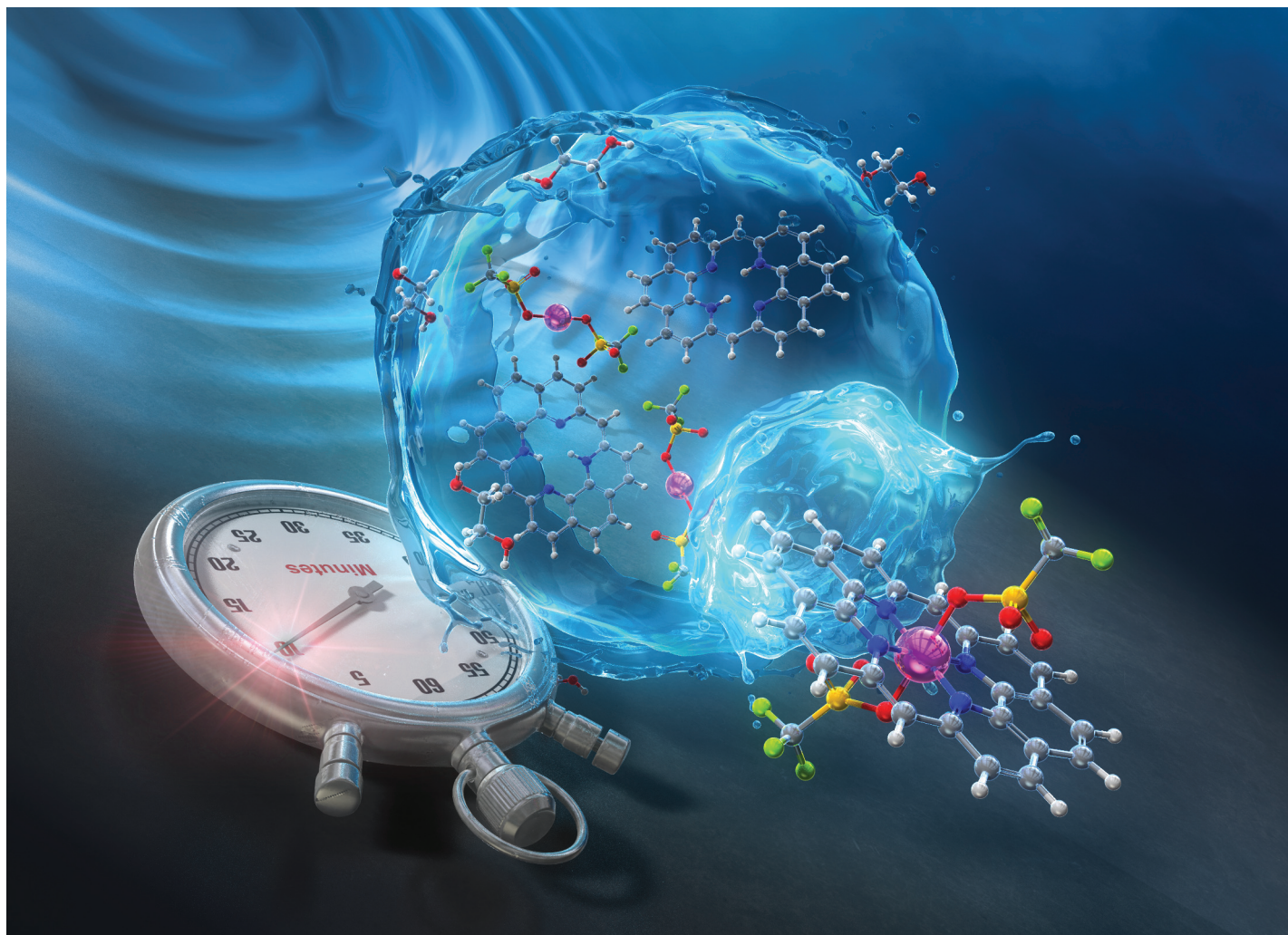


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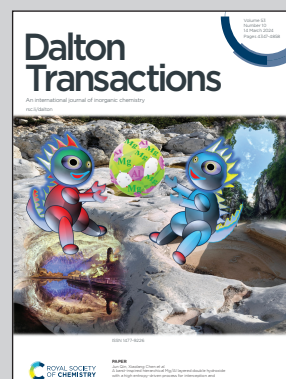


Showcasing research in collaboration of four groups:
Makoto Moriya (Shizuoka University), Yuta Nabae (Tokyo Institute of Technology), Junya Ohyama (Kumamoto University), and Ryoichi Kojima (Asahi Kasei Corporation).

One-pot gram-scale rapid synthesis of MN_4 complexes with 14-membered ring macrocyclic ligand as a precursor for carbon-based ORR and CO_2RR catalysts

CoN_4 , CuN_4 , and NiN_4 complexes with a 14-membered ring hexaazamacrocyclic ligand H_2HAM were synthesised as precursors for ORR and CO_2RR catalysts via a one-pot, gram-scale synthesis procedure, which involved microwave heating for only 10 min, in high purity and yield. Detailed structures of the obtained 14MR- MN_4 complex were revealed by single-crystal X-ray diffraction. This result showed the obtained 14MR- MN_4 complexes possess strong M-N bonds compared to previously reported phthalocyanine-based MN_4 complexes with a 16-membered ring structure.

As featured in:



See Yuta Nabae, Makoto Moriya
et al., *Dalton Trans.*, 2024, **53**, 4426.