The coordination chemistry of manganese complexes with N,O donor ligands has attracted great interest because of their structural diversity and the importance as mimetics of Mn-dependent biomolecules. Hence, our efforts have been focused on the preparation and characterisation of low-molecular weight inorganic analogues that would mimic physiological properties and catalytic activity of manganese-containing enzymes.

Herein, we report the structural characterisation of three new structurally different manganese(II) complexes with two homologous pyridine alcohols: 2-hydroxymethylpyridine (2-CH$_2$OHpy) and 2-hydroxyethylypyridine (2-CH$_2$CH$_2$OHpy), elucidated by spectroscopic, X-ray crystallographic methods and magnetic studies.

The fragment of 2D network of [Mn$_2$(µ-Cl)(2-CH$_2$CH$_2$OHpy)$_2$]Cl$_2$ with metal-to-metal interactions is shown in Figure 1. The crystal structure of [Mn$_2$(µ-Cl)(2-CH$_2$OHpy)$_2$]Cl$_2$ is shown in Figure 2. The structure of the 2D network is shown in Figure 3. The 3D structure of [Mn$_2$(µ-Cl)(2-CH$_2$CH$_2$OHpy)$_2$]Cl$_2$ is shown in Figure 4. The coordination polyhedron of [Mn$_2$(µ-Cl)(2-CH$_2$OHpy)$_2$]Cl$_2$ is shown in Figure 5. The molecular structure of the complex is shown in Figure 6. The packing diagram of the complex is shown in Figure 7. The view of the 3D supramolecular network is shown in Figure 8. The effect of reaction temperature on the oxygen evolution rate from the disproportionation of H$_2$O$_2$ in the presence of the complexes is shown in Figure 9. The oxygen evolution rates for the disproportionation of H$_2$O$_2$ in the presence of the complexes are shown in Table 1.