Chemists employ DNA to detect metallic toxicity in water

Researchers at Stanford University in the US **have devised a cheap DNA-based system able to detect and identify an unprecedented number of metals in water**. Eric Kool's team used sets of short sensor chains attached to polyethylene glycol–polystyrene beads to discriminate between 57 different metals, including alkali, transition and lanthanide metals.

Having swapped conventional DNA bases for groups whose fluorescence changes in the presence of metals, the chemists' system can use the colours produced as a fingerprint for each metal. 'A single experiment requires an extremely tiny amount of material – only about a picomole of any one chemosensor – so the sensing is quite inexpensive,' Kool tells *Chemistry World.*

Kool's team previously used its DNA-like oligodeoxyfluorosides to produce sensors to detect **toxic gases** and **food spoilage**. Now, they've produced oligodeoxyfluoroside chains from nine building blocks: two simple fluorescent bases, three spacers, plus four bases that both fluoresce and bind metal ions. Varying block choice and position, the chemists created a library containing 6561 four-base chains or tetramers, 174 of which fluoresced strongly when their beads were left in 36 metal salt solutions.

Read full original article: Fluorescent DNA becomes versatile metal detector