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Bioinspired optical sensing of picomolar concentrations of lead in solution.[1] ANUSHREE SAHA, VLADISLAV YAKOVLEV, University of Wisconsin-Milwaukee, UNIVERSITY OF WISCONSIN-MILWAUKEE TEAM — Lead poisoning is a life threatening medical condition, which can cause irreversible neurological, cardiovascular and reproductive damage. Despite of an extensive research, the minimum amount of lead to be considered hazardous is not yet known. The biophysical interactions of minute quantities of lead with blood are also poorly understood. Albumin being the most important binder and transporter in blood, is known to interact with lead ions in solution. In this report, we present the first experimental evidence that picomolar concentrations of lead strongly affect albumin properties in solution. High precision difference Raman and excitation-emission fluorescence spectroscopies are employed to identify the effect of lead ions on albumin. Both spectroscopies proved to be very effective in detecting lead poisoning at a very early stage, setting a new course for bio-inspired inexpensive platform of lead sensing

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