Title:	Exploring Metallosurfactant Protein Assemblises and their Manifestationin Coffee Ring Effect
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Abstract:	The main proteins in the serum are albumin and globulin, further which is subdivided into alpha, beta, and gamma globulin. Serum albumin (ALB) level and its ratio with globulin have been used as a non-specific marker for general kidney and liver health, gastrointestinal disease and others. Herein, we report the interactivity and conjugate formation ability of different surfactants such as Zn(II)-metallosurfactant (C 16 DPA•Zn 2+), cationic surfactant cetyltrimethylammonium bromide (CTAB) and anionic surfactant sodium dodecyl sulfonate (SDS) with two clinically relevant serum proteins, albumin (ALB) and γ-globulin (GGB). To confirm the binding of surfactant-protein assemblies fluorescence spectroscopy, fluorescence anisotropy, circular dichroism (CD), and zeta potential studies were done. For the characterization of these conjugates, fluorescence microscopy, transmission electron microscopy (TEM), dynamic light scattering (DLS), and contact angle studies were done. We found that Zn(II)-metallosurfactant -ALB conjugate promotes coffee ring formation, whereas with GGB it gets suppressed which is due to the difference in structural anisotropy and hydrophobicity of the conjugates. To check the coffee ring, in addition to fluorescence microscopy, scanning electron microscopy (SEM) and atomic force microscopy (AFM) has been done. Additionally, validation of this biosensing platform has been established in human serum samples which can have potential application for on-spot rapid diagnostics in a remote area
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