

## Supporting information:

### A self-assembled, luminescent Europium Cholate hydrogel: a novel approach towards lanthanide sensitization

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#### Gelation procedure:

Eu cholate hydrogels were obtained by mixing aqueous solutions of europium acetate and sodium cholate at room temperature (~ 25 °C). They formed in various ratios of europium acetate and sodium cholate. The final concentration of sodium cholate was kept constant at 15 mM and the concentration of europium acetate was varied from 3 to 7 mM. The formation and the stability of these gels were critically dependent on the stoichiometry of Eu(III) and cholate. Sonication was found to induce the formation of gels from their mixtures and the time duration of sonication required to form gels varied depending on the ratio of Eu(III) and cholate. So, for convenience, the description of the gelation procedure is divided into four different stages starting from the mixing of the two components. The four stages involved in the formation of the Eu cholate gel [Eu(III) = 5 mM] are described below in details as this gel was used for the sensitization studies.

**Stage I:** At room temperature (~25 °C), 200 μL of a solution of Eu(OAc)<sub>3</sub> (10 mM) was taken in a test tube (internal diameter 0.8 cm, length 7.5 cm). Then 200 μL of a solution of sodium cholate (30 mM) was added to it quickly which resulted in the formation of a white precipitate and the mixture turned turbid.

**Stage II:** The mixture was sonicated (ultrasonic bath) immediately. During sonication, first the turbidity disappeared and within 15-20 seconds the mixture turned into a translucent gel.

**Stage III:** The gel on further sonication for 20 seconds could be turned into a viscous solution.

**Stage IV:** The viscous solution again turned into a translucent gel within 5-10 seconds. But if the sonication was continued for a longer period of time in stage III (for a few minutes), the reformation of the gel from the viscous solution took a few hours.

When the concentration of Eu(III) was varied in the gels, the observation in stage I remained similar. But discernible changes could be observed for the next three stages. For example, when the concentration of Eu(III) was 3 or 4 mM, the formation of gels in stage II took ~5 seconds and they could be transformed into solutions (stage III) by sonicating for 5 seconds. The reformation of gels (stage IV) at these concentrations of Eu(III) took several hours. On the

contrary, for 6 mM Eu(III), the gel formed in 15-20 seconds in stage II, but this gel was much more resistant towards sonication (stage III) and sonication for several minutes actually resulted in the formation of a partial gel. All these four stages for the Eu cholate (5mM/15mM) gel are shown in fig. S1.

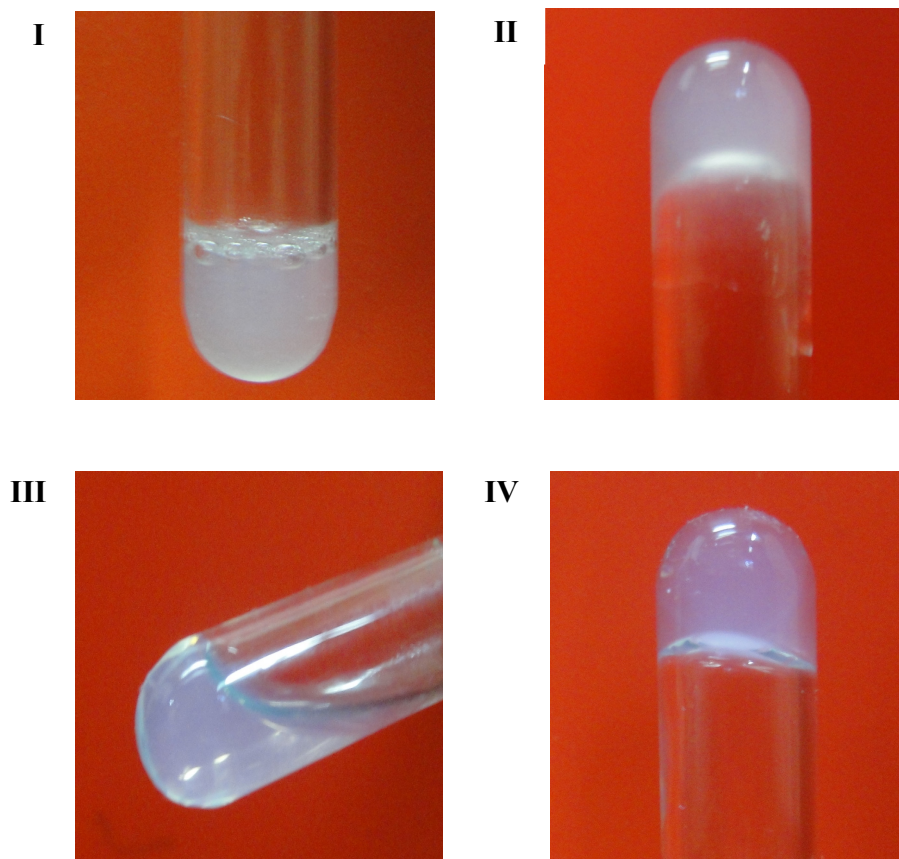


Fig S1: Photographs of different stages observed during the formation of a Eu cholate gel (Eu(III) = 5 mM; sodium cholate = 15 mM).