

IIT-G designs liquid marbles with nano clay for controlled drug delivery

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A non-sticking, non-wetting liquid marble that floats in water and release its contents in a pre-programmed time



Researchers at the Indian Institute of Technology Guwahati (IIT-G) have developed liquid marbles using nano clay that can be pre-programmed for drug delivery and cascade chemical reactions.

Conventionally for treating any disease, we take medicines in the form of tablets, capsules, syrups, ointments, etc. A controlled drug delivery system is a more efficient technique to deliver the required dose at the specific site gradually over the desired period of time. Loading and release of drug in its soluble form is another important aspect—which can be achieved with this liquid marble.

The IIT-G team has used the liquid marbles approach for the controlled release of drugs and programmed chemical reaction. The team has engineered liquid marbles to have a ‘time bomb’ type release effect and to carry out a spontaneous chemical reaction.

The nano clay marbles were made of a shell of nanoclay that holds the liquid. To programme the marbles for timed release of the content, the researchers modified the nanoclay with chemical groups that were either water-loving (hydrophilic) or waterhating (hydrophobic).