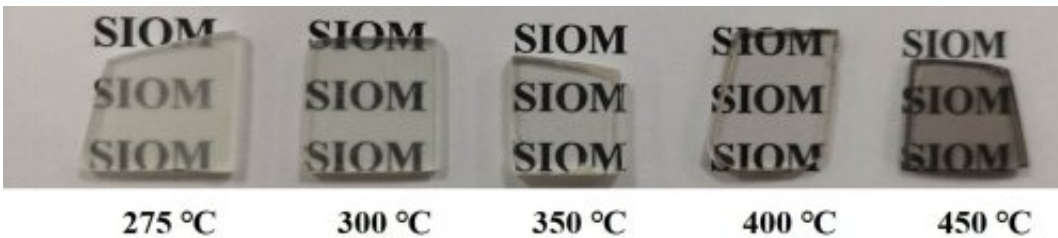


Researchers prepare novel low-melting, nitrogen-containing, stannous chlorophosphate glass

July 6 2022, by Li Yuan



Sn-P-O-Cl-N glass prepared at different temperatures. Credit: SIOM

Researchers from the Shanghai Institute of Optics and Fine Mechanics (SIOM) of the Chinese Academy of Sciences (CAS) have prepared a P-Sn-O-Cl-N glass system at 350 °C and explored its structural properties.

The results were published in *Journal of Non-Crystalline Solids* on June 6.

Phosphate glass has potential applications in aspheric glass forming, low temperature encapsulation, photonic conversion and organic composite materials due to its low glass transition temperature.

Chlorophosphate glass has the combined advantages of phosphate and halide glass, such as high thermal expansion coefficient, strong

resistance to devitrification and low phonon energy. The [melting temperature](#) can influence the formation and properties of low-melting glass. However, the effect of melting temperature on the properties of Sn-P-O-Cl-N glasses prepared below 500 °C remains unknown.

The research team used the traditional melt extraction cooling method to prepare the P-Sn-O-Cl-N colorless transparent glass system below 500 °C. By comparing the [color](#), [transparency](#) and chemical stability of the samples, they found that the optimal melting temperature was 350 °C, and the glass exhibited an ultra-low glass transition temperature of

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