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Hybrid PNIPAM-based Hydrogels for Scalable H₂ Evolution

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Platinum (Pt) loaded carbon nitride (CN) is a promising photocatalyst under visible light for green hydrogen (H₂) production. We aim to develop this system in a thin polymer film to make it industrially scalable. The Poly(*N*-isopropylacrylamide) (PNIPAM) hydrogel is used as a host matrix and water storage medium to facilitate homogeneous dispersion of the catalytic centers. The hybrid film's vertical distribution and inner microstructure are studied under *in situ* conditions with time-of-flight neutron reflectometry (ToF NR) and grazing incidence small angle neutron scattering (GISANS). The resulting H₂ produced is measured by gas chromatography.

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