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Preparation and Application of Temperature Sensitive Paintings

CHI LI, Peking University — Temperature sensitive painting (TSP) is a rapidly developing surface optical measurement technology, which uses temperature sensitive fluorescent probe molecular to obtain the temperature distribution on the surface of the model. Two different types of TSP material are prepared to apply in fluid mechanical experiments. Rhodamine is used as fluorescer and acetone as solvent for the first recipe, while rare earth material as fluorescer and zirconia as solvent for the second recipe. With proper calibration, surface temperature nephogram and temperature gradient nephogram is obtained based on the measured light intensity data, and transition location and heat flux is analyzed. Double layer - multi component TSP measurement technology and more strict calibration will be developed in the near future to get more precise heat flux distribution.

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