

The history of liquid crystals: from carrots to displays in a century

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This talk gives a rapid tour of the history of liquid crystal science and technology from its first hesitating steps in the late 19th century up to the present day.

The story is one of continuing argument, including scientific disagreement and controversy over technological invention claims.

Principal protagonists include the German physicist Otto Lehmann (1855-1922), who proposed the term “liquid crystal”, his professional rival Gustav Tammann (1861-1938) who denied their very existence, and the French crystallographer Georges Friedel (1866-1933).

The early workers denied any possibility of practical application, but as early as 1933 the Marconi company produced a patent for a liquid crystal optical valve, for use in TV screens.

In the 1950s liquid crystals were first used in thermometers, and display technology research started in the early 1960s.

The invention of the twisted nematic display in the late 1960s created a sea-change in the technological significance of liquid crystals.

But controversy still rages over who exactly invented them, for courts in different countries resolved patent lawsuits in mutually incompatible ways.

I shall also touch on the development of a theoretical framework to describe these materials, including efforts in statistical mechanics, hydrodynamics and topology.

The talk will conclude with some guesses about the future of liquid crystal research and applications