

# Polywater (i.e. polycrap)

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# Outline

- The Russian revolution
  - Fedyakin and Deryagin
  - Experimental setup
  - Results
- Spreading to the West
  - Lippincott and Allen
- Involvement of the media
  - Donahoe article
- Polybunking De Water
  - Rousseau et al

# In the Beginning...

- Nikolai N. Fedyakin
  - Kostrama Polytechnical Institute
  - Found spontaneous water condensation in capillaries under certain experimental conditions (1962)
    - Different properties than normal water
- Boris V. Deryagin
  - Surface Forces Laboratory at the Institute of Physical Chemistry of the Soviet Academy of Sciences
  - Took over research
    - Perfected experimental technique for production of condensate

# Experimental Setup

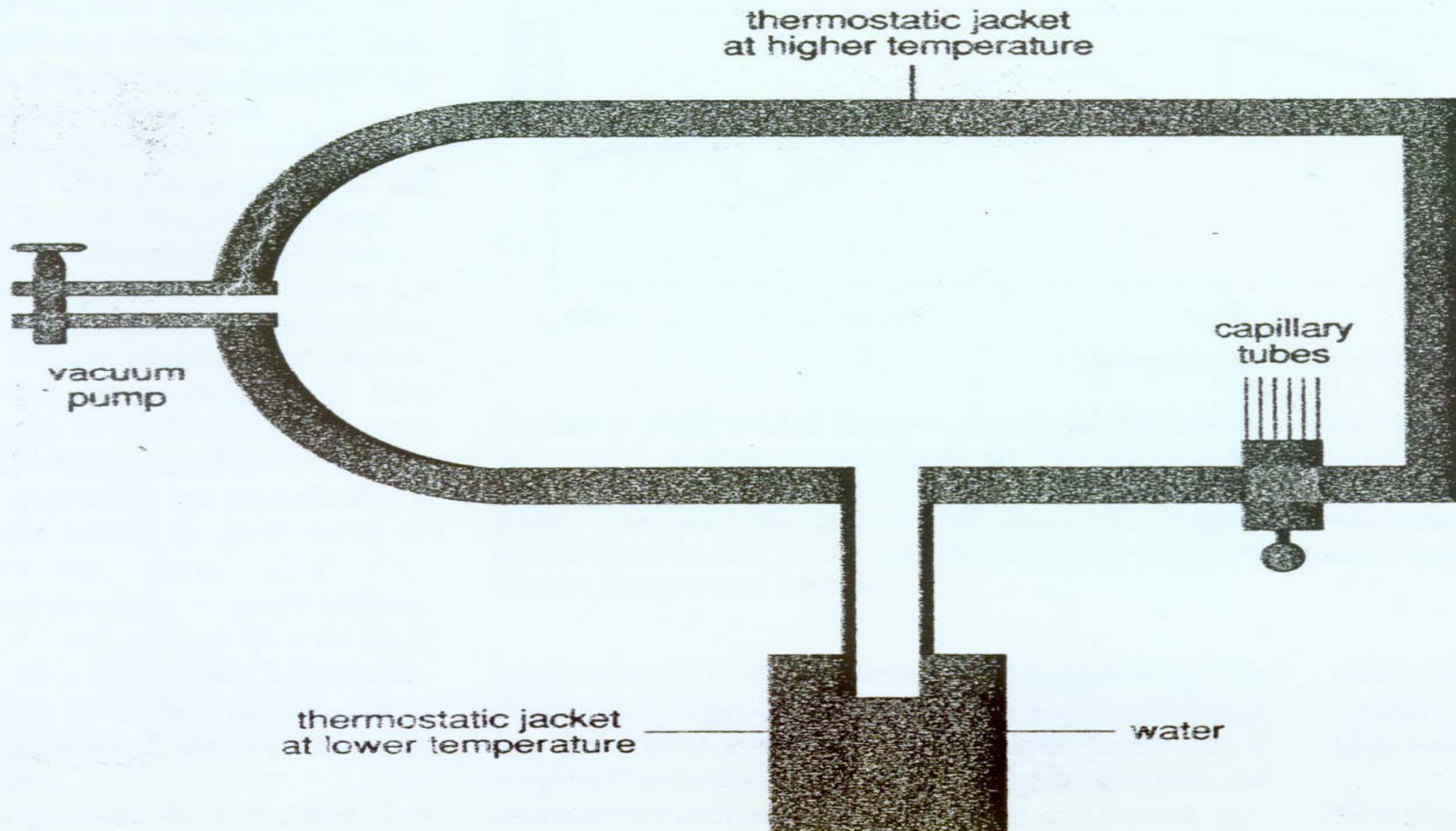


Figure 3. Polywater condenses inside freshly drawn capillary tubes. Water evaporated from a reservoir connected to the chamber nearly saturates the atmosphere with water vapor. In a few days, material condenses in the capillaries. Any normal water in the condensate evaporates. The remaining substance is polywater.

# Process and Results

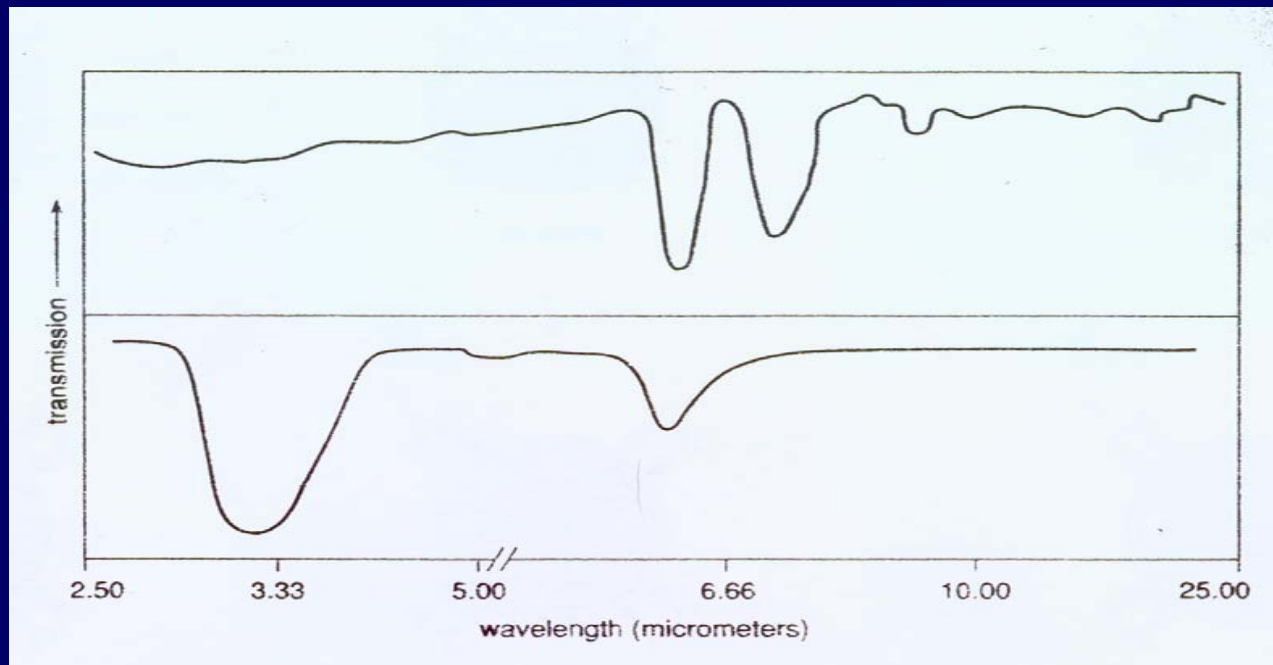
- Condensate Properties
  - Freezing “Interval” ~ 243 K to 213 K
  - Boiling Point ~ 523 K to 573 K
  - Density 1.4 g/cm<sup>3</sup>
  - Thermal expansion coefficient ~ 1.5 times normal water

# Spreading to the West

- Ellis R. Lippincott U. of Maryland
  - Infrared Spectroscopy
    - Very different from normal water
    - Taken as evidence of polymeric structure

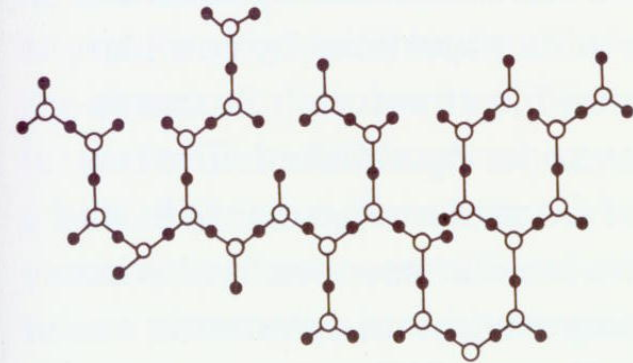
Polywater

Water

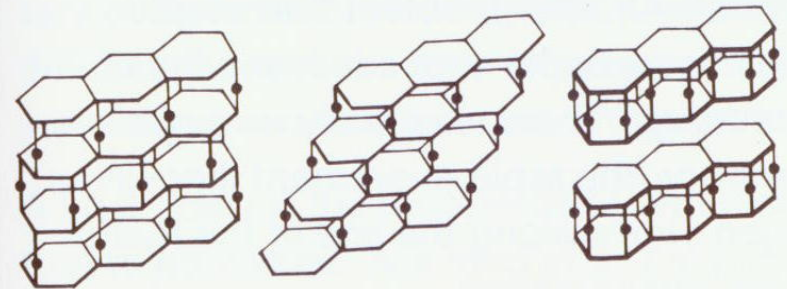


# Spreading to the West

- Leland C. Allen
  - First methodical theoretical investigation
  - Found feasible structure—  
cyclometric water
    - Roughly the same internal energy as normal water
    - Compatible with high density and viscosity of polywater



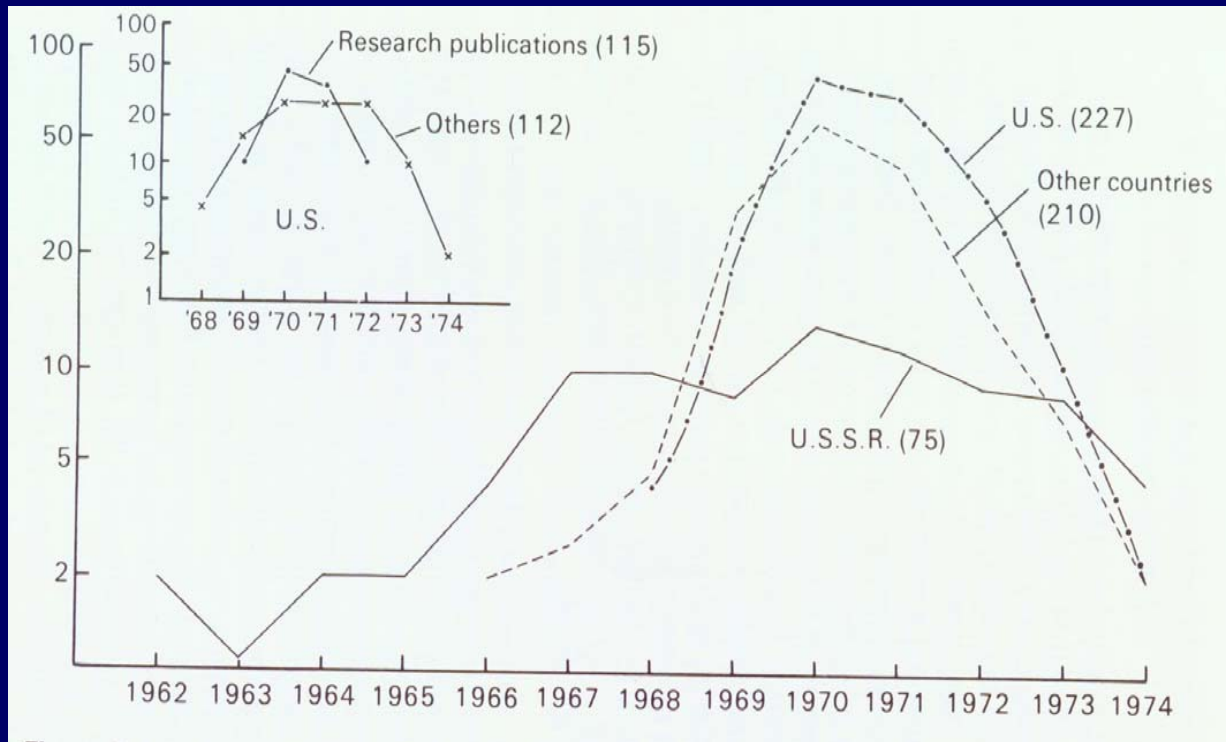
“Polywater”  
(Lippincott et al., June 1969)



“Cyclometric water”  
(Allen and Kollman, March 1970)

# Media Involvement

- F. J. Donahoe (1969)
  - Most Dangerous Material on Earth
  - Mass-media gets involved



The Number of Publications Per Year

Franks, F., Polywater, p. 120

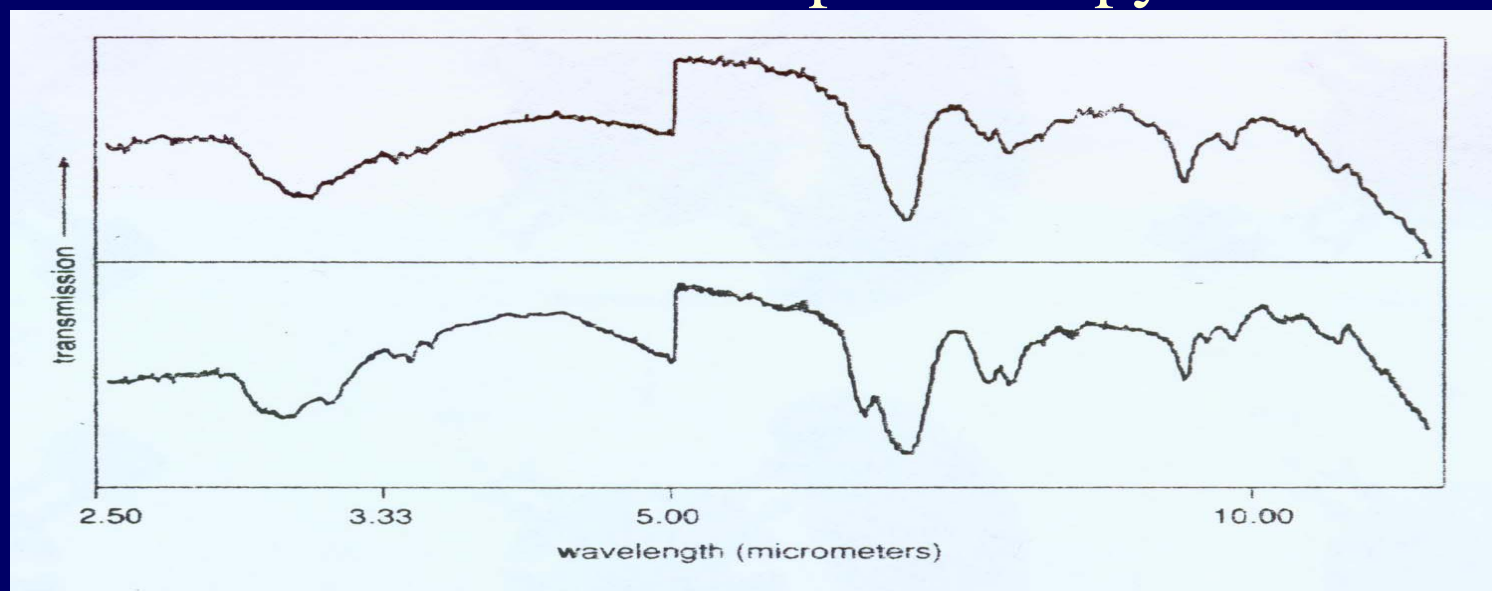


# LeHigh Conference (1970)

- The “Showdown” between believers and doubters
- Nothing much resolved
  - Lippincott
    - trouble producing spectra without contaminants
  - Allen
    - new calculations cast doubt on polywater
  - Denis L. Rousseau
    - introduced theory of organic contaminants

# DeBunking

- Denis Rousseau and Sergio Porto at USC
  - Use Raman scattering for spectroscopy
  - Condensate turns to black char
    - Polywater should not do this
    - Combination of Na, Cl, and  $\text{SO}_4$
  - Proponents-contaminants in Rousseau's but not theirs
  - Rousseau uses infrared spectroscopy on sweat



Polywater

Sweat

Rousseau 57

# Discussion and Conclusion

- Polywater as a Pathologic Science
  - (Langmuir 1953)
- People remained divided on the subject for a long time
- The epidemic of polywater was fuelled by intense media coverage