

H. TRACY HALL  
BIOGRAPHICAL SKETCH

August 1967

Hall, Howard Tracy

Current Address:

1711 No. Lambert Lane, Provo, Utah 84601; Home Phone (801) 373-3323; Office, T-41, Brigham Young University, Provo, Utah 84601; Phone (801) 374-1211, Ext. 3477.

Born:

Ogden, Utah, 20 Oct. 1919 (Parents: Howard and Florence Tracy Hall).

Married:

To Ida Rose Langford, 24 September 1941 in Salt Lake City, Utah.

Children:

Sherlene, Howard Tracy, Jr., David Richard, Elizabeth, Virginia, Charlotte, Nancy.

Education:

B. S. 1942 M. S. 1943, Ph.D. 1948 (Physical Chemistry) University of Utah, Special wartime training, 11 months in electronics at Bowden College, M.I.T., Harvard and Honolulu Naval Base while an Ensign, U. S. Navy, 1944-1946.

Employment:

1967, Professor of Chemistry, Brigham Young University, Provo, Utah.  
1955-1967, Director of Research for the entire University and Professor of Chemistry, Brigham Young University, Provo, Utah.  
1948-1955, Research Associate, General Electric Research Laboratory, Schenectady, New York.  
1942-1944 & 1946, Chemist, U. S. Bureau of Mines, Salt Lake City, Utah.  
1940-1942, Chemical Analyst, Sperry Flour Mills, Ogden, Utah (part time)  
1939-1940, Photographer, Checketts Photo, Ogden, Utah.

Military Service:

Ensign, U. S. Navy, 1944-1946.

Consulting:

1957-----, for various industrial and governmental organizations.



### Honorary Positions:

President, Utah Academy of Sciences, Arts and Letters, 1960-1961.  
 Chairman, Salt Lake Section, American Chemical Society, 1959.  
 Fellow, American Association for the Advancement of Science, 1960- ----.  
 Editorial Board, "Inorganic Chemistry," 1961-1964.  
 Editorial Board, "The Review of Scientific Instruments," 1966- ----.

### Awards:

1965, The National Association of Manufacturer's "Modern Pioneers in Creative Industry Award," The Waldorf Astoria, New York City, Dec. 2.  
 1965, The American Chemical Society, Salt Lake Section's "Utah Award," U. of Utah, Salt Lake City, Dec. 9.  
 1965, The Brigham Young University's "James E. Talmage Scientific Achievement Award," Baccalaureate Exercises, Provo, Utah, May 27.  
 1964, Third Annual "Olin Mathesen Lecture," Yale University, New Haven, Conn., April 22.  
 1964, First "Annual Faculty Lecture," Brigham Young University, Provo, Utah, April 8.  
 1962, The American Society of Tool and Manufacturing Engineers "Research Medal."  
 1959-1963, Alfred P. Sloan Foundation Research Fellow.

### Other Honors:

Featured in the Man Made Diamond Exhibit, Federal Science Building, Seattle World's Fair (1962) and also in the Smithsonian Institute, diamond exhibit in Washington, D. C.

### Professional Societies:

American Chemical Society, American Association for the Advancement of Science, The American Physical Society, The Mathematical Association of America, Sigma Xi, Phi Kappa Phi, Timpanogos Club of Utah.

### Major Scientific Achievements:

1. The first synthesis of diamond (1954). This feat had eluded scientists for over 150 years.
2. The first high pressure, high temperature apparatus, "The Belt." (1000,000 + atmospheres, simultaneously with 2000 + °C.) (1953).
3. Determination of the first melting curve under high pressure, high temperature conditions (for Germanium) (1954).
4. The second high pressure, high temperature apparatus, "The Tetrahedral Press," which circumvented the proprietary interest that prevented use of the Belt for research after leaving General Electric's employ (1956).



5. The first high pressure, high temperature X-ray diffraction apparatus (with J. Dean Barnett) (1962).
6. Discovery of the first pressure-induced phase change from a close-packed to non-close-packed structure (FCC to BCC in Ytterbium at 40 kb.), (with J. D. Barnett and Leo Merrill) (1963).
7. The determination of the nature of the "resistance cusp" in cesium. This intriguing problem had remained unsolved since discovery of the cusp by P. W. Bridgman in 1951 (with Leo Merrill and J. Dean Barnett) (1964).
8. The concept of "Periodic Compounds" (1965).



## PUBLICATIONS OF H. TRACY HALL

1. Graham W. Marks and H. Tracy Hall, "A Method for the Spectrochemical Determination of Germanium, Tin and Lead in Ore Samples," U.S. Bureau of Mines Report of Investigations No. R.I. 3965, Nov. 1946, 38 pp.
2. H. Tracy Hall and Henry Eyring, "The Constitution of Chromic Salts in Aqueous Solution," J. Am. Chem. Soc., 72, 782-790 (1950).
3. Graham W. Marks and H. Tracy Hall, "Transmission Characteristics in the Visible Spectral Region of the Quinalizarin and Beryllium - Quinalizarin Complex in N/4 Sodium Hydroxide Solution," U.S. Bureau of Mines Report of Investigations, No. 4741, Oct. 1950, 5 pp.
4. H. Tracy Hall and Raymond M. Fuoss, "Empirical Analysis of Viscosity Data," J. Am. Chem. Soc. 73, 265-269 (1951).
5. H. Tracy Hall, "Molecular Weight of Polytrifluorochloroethylene by Light Scattering," J. Polymer. Sci., 7, 443-447 (1951).
6. H. Tracy Hall, Edward L. Brady and Paul D. Zeman, "Viscosity of Polytrifluorochloroethylene in O-Chlorobenzotrifluoride," J. Am. Chem. Soc., 73, 5460 (1951).
7. H. Tracy Hall, "The Solubility of Polytrifluorochloroethylene," J. Am. Chem. Soc., 74, 68-71 (1952).
8. H. Tracy Hall, "A New Method of Mounting Diamonds," Rev. Sci. Instr., 25, 1035-1036 (1954).
9. F. P. Bundy, H. T. Hall, H. M. Strong, and R. H. Wentorf, "Man-made Diamonds," Nature, 176, 51-54 (1955).
10. H. Tracy Hall, "The Melting Point of Germanium as a Function of Pressure to 180,000 Atmospheres," J. Phys. Chem., 59, 1144-1146 (1955).
11. H. Tracy Hall, "Chemistry at High Temperature and High Pressure," Research and Engineering, 11, 27-28 (1956).
12. H. Tracy Hall, "Chemistry at High Temperature and High Pressure," High Temperature--A Tool for the Future, Stanford Research Institute, Menlo Park, California, 161-166 (1956).
13. H. Tracy Hall, "What The Sunday School Has Done for Me," The Instructor, 91, 341 (1956).
14. H. Tracy Hall, "Chemistry at High Pressures and High Temperatures," J. Wash. Acad. Sci., 47, 300-304 (1957).