

Consulting only

RÉSUMÉ

Fred Ewing
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R É S U M É -

- I. Academic Research
 - II. Industrial Research
 - III. Patent Law
 - IV. Consulting
 - V. Personal
- Bibliography

I. Academic Research

Graduate work - Cal Tech - 1927-30, 1935

Research Fellow " " - 1945-52 (part time)

Senior " " - 1957-58

Determined the crystal structure of Lepidocrocite, Diaspore, and other hydrated oxides of iron and aluminum, from analysis of their X-ray diffraction patterns. This work was the first to show the presence and function of hydrogen bonds in oxyhydrate structures.

Several years were spent in an experimental and theoretical study of metals and intermetallic compounds. In particular, in comparing the Pauling valence system for metals with the older Hume-Rothery valences, it was found that stabilization of a given phase by certain electron to atom ratios characteristic of filled Brillouin zones is equally satisfactory in either system, and that the Pauling valences are to be preferred as presenting a more logical picture of magnetic properties.

II. Industrial Research

Research Chemist - Union Oil Co. - 1930-1935

Chief Chemist - Aerojet Corp. - 1942-1945

Director of Research - Filtrol Corp. - 1940-1942

Director of Research - Filtrol Corp. - 1952-1954

Senior Research Chemist - U S Borax - 1956-1957

At Union, typical problems were: refining of naphthenic acids and phenols; propane de-asphalting and dewaxing of lube oils, inhibitors

II. Industrial Research (cont'd.)

for gasoline; solvent extraction and lamp tests on kerosene; petrochemicals by liquid and vapor phase oxidation of hydrocarbons.

At Aerojet, I supervised a group of about 20 on chemical problems related to rocket propulsion. There we developed the first successful liquid mono-propellant, extended the temperature limits of solid propellants, developed smokeless oxidizers, etc.

At Filtrol, supervising a group originally about 10, finally about 80, I had the responsibility for originating and administering research programs revolving largely around the acid activation of montmorillonite and halloysite clays. Projects which moved into commercial acceptance include clay catalysts for both fixed bed and fluid cracking of petroleum, short activation by strong acid, activations specific to the removal of iron, dessicants of both the montmorillonite and alumina type, alumina based hydroforming catalysts, and improved bleaching earths.

At U S Borax, I worked up a synthesis of BCl_3 for use in "exotic fuel" manufacture.

III. Patent Law

Member, Patent Department
Union Oil, Los Angeles - 1935-1937

Agent, Harris Kiech Foster
and Harris, Los Angeles - 1937-1940

III. Patent Law (cont'd.)

At Union, became liaison man between Research and Patent Departments. Abstracted patentable concepts from Research Reports: abstracted useful art from new patents. Wrote and prosecuted patent applications. Made exhaustive search on bituminous emulsions, and was prior art witness in a patent suit thereon.

Harris et al first hired me to assist in the defense of Gray Process suit. Later specialized in chemical patents -- preparation, amendments, etc. Typical clients: Beckman Instrument Company, Petroleum Rectifying Company, Refining Uninc.

Completed one year of night school course in Law.

IV. Consulting

| | |
|--|-----------------------------------|
| Special Consultant, War Department | - 1945 |
| General Consulting | -(1945-1952) (1954 to date) |
| Consultant on Fuels to Scientific Advisory Board, Chief of Staff, Air | - 1956-1957 |

Clients have included:

| | |
|--------------------------|---|
| War Department, Pentagon | C I O S observer at German Rocket Developments |
| Galcit, Pasadena | Combustion problems Jet Fuels |
| Aerojet, Azusa | Solid & liquid rocket pro- pellants |
| Filtrol, Los Angeles | Catalysts and Absorbents |
| Refining, New York | Vegetable oils |

V. Personal

Born December 20, 1906, Colorado, U.S.A.

Married - two children

B S C.I.T., Pasadena, 1927 - Chemical Major

PhD C.I.T., Pasadena, 1935 - Chemical Major
Physics and Math
Minors

Can read French, German, Spanish.

BIBLIOGRAPHY

Fred J. Ewing

Patents (U. S. A.)

| | |
|-----------------|---|
| 2, 035, 696 | Naphthenic Acids from Petroleum |
| 2, 035, 741 | " " " " |
| 2, 035, 742 | " " " " |
| 2, 133, 765 | " " " " |
| 2, 133, 766 | " " " " |
| 2, 153, 302 | Oxidation Products of Hydrocarbons |
| 2, 222, 215 | Solvent Extraction of Oxidation Products |
| 2, 288, 441 | Propane Refining of Vegetable Oils |
| 2, 301, 528 | De-Waxing |
| 2, 329, 889 | Refining Vegetable Oils having Free FaHy Acids |
| 2, 391, 312 | Catalyst for Cracking Oil |
| 2, 410, 436 | Catalyst and Catalytic Process |
| 2, 409, 263 | Dessicant |
| Reissue 23, 118 | Propane Refining Vegetable Oils |

Plus about ten classified patents on rocket fuels and propellants

Bibliography (cont'd.)

Publications

- (with Lucas, H. J.) A New Method of Preparing PF_5 ,
J. A. C. S. 49, 1270 (1927)
- (with Pauling, L.) Crystal Structure & Crystal Energies of
 K_2PtCl_6 ; Z. Kryst. 68, 223-30 (1928)
- Crystal Structure of Diaspore AlHO_2 ;
J. Chem. Phys. 3, 203-07 (1935)
- Crystal Structure of Lepidocrocite FeO_2H ;
J. Chem. Phys. 3, 420-24 (1935)
- (with Davidson, R. C.
& Shute, R. S.) Catalysts of the Activated Montmorillonite
Type; Nat. Petr. News, 35, #27 R318-21
(1943)
- (with Pauling, L.) Ratio of Valence Electrons to Atoms in
Metals and Inter-Metallic Compounds;
Revs. Modern Phys. 20, 112-22 (1948)
- Structure of UH_3 ;
J. A. C. S. 70, 1660-1 (1948)
- (with Shoemaker, D. P.,
Marsh, R. E. &
Pauling, L.) Interatomic Distances and Atomic Valences
in NaZn_{13} Acta Crystallographica 5,
637-44 (1952)

Also classified publications, including a book on German Rockets,
Propellants, and Gun Powders as of 1945.