Wayne P. Schammel, Ph.D.

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SUMMARY

Creative, results-oriented Senior Research Chemist with a proven track record of delivering value to the petrochemical industry. Experience ranges from implementing incremental cost savings to problem solving to devising novel new approaches. Demonstrated expertise in utilizing High Throughput Experimentation (HTE) methodologies for the development of homogeneous and heterogeneous catalysts. Acknowledged as a strong technical leader and mentor and well respected for fostering team behaviors. Excellent communication and interpersonal skills and works well with people at all levels.

PROFESSIONAL EXPERIENCE

Siluria Technologies, Inc.,

Lead Principal Scientist   Nov 2009 – present
Using High Throughput Technologies and prior catalyst development experience, discovered and developed several families of novel fixed bed catalysts for the Oxidative Coupling of Methane, some of which are currently being scaled up for demonstration testing and eventual commercialization.   Over a dozen patent applications have resulted from this work including 3 issued US patents.

BP Americas Company - Aromatics and Acetyls

Senior Research Associate   2004 - 2009
Formed and guided a team of 5 chemists in a catalyst discovery program on Purified Terephthalic acid (PTA)

- Led the team that discovered and developed a new oxidation catalyst family which has the potential to dramatically reduce both capital and operating costs for the major commodity chemical, Purified Terephthalic acid and other aromatic acid products.
- Stimulated the use of High Throughput Experimentation (HTE) in catalyst discovery and development projects, thus saving several hundred thousand dollars per year in research costs and making rapid and profound discoveries.
- Generated 5 new world patent applications in the past 2 years, which solidified the intellectual property position for revolutionary new process and catalyst improvement.

Process Chemistry Lead for Aromatics   2002-2004
Led the Process Chemistry Community of Practice, a strategic network of chemists to ensure best in class position for process chemistry in BP Aromatics

- Guided the development and implementation of tools to facilitate research and increase productivity. Knowledge management and technical software tools were critical.
- Identified, monitored and addressed worldwide threats and opportunities to the PTA business by performing a SWOT analysis of projects and activities. Gaps with competitors were addressed and strengths were enhanced.
- Established new external partnerships with academic and industrial specialists, which served to leverage R&D resources effectively. High throughput experimentation capabilities were enhanced and academic partnerships were nourished and improved.

Amoco Chemicals Company

Senior Research Associate   1992 - 2002
Senior Research Chemist   1985 - 1992
Senior technical leader responsible for process improvements on the Trimellitic Anhydride (TMA) process for Amoco Chemicals

- Designed, developed and implemented several significant catalyst improvements that improved the oxidation yield of pseudocumene to TMA. These improvements resulted in estimated annual savings of $2-3 million.
- Reduced catalyst costs by $1million per annum when catalyst metal prices escalated
- Provided active technical support to Manufacturing as needed which included solving very significant corrosion, plugging and energy problems

Staff Research Chemist   1982 - 1985
Research Chemist   1976 - 1982
- Provided process design data for the Whiting Polybutene unit which successfully started up on time and under budget and continues to run to this day
- Discovered fundamental relationship between impurities and polymer molecular weight which guided research in Poly Isobutylene research from that point forward
- Designed and constructed a low temperature xylene crystallization unit still in use to this day

EDUCATION

PhD Inorganic Chemistry, The Ohio State University, Columbus, Ohio
Bachelors of Science Chemistry, University of Nebraska, Lincoln, Nebraska

PUBLICATIONS AND PATENTS

- 28 US Patents Issued and 7 publications
- 18 active Patent applications on new oxidation catalyst technology

Wayne Schammel US Patent and Application Portfolio

US Patent #	Title
4,465,887	Process for producing butylene polymers having molecular weights in the range of from about 400 to 5000 molecular weight
4,537,978	Process for the production of trimellitic anhydride
4,587,350	Process for the production of trimellitic anhydride
4,754,062	Iron-enhanced selectivity of heavy metal-bromine catalysis in the oxidation of polyalkylaromatics
4,755,622	Process for the production of trimellitic acid and pyromellitic acid by staged bromine addition in an oxidation of polyalkylaromatics
4,764,639	Process for the production of trimellitic acid
4,786,621	Process for recovery of cobalt and manganese for oxidation residue incinerator ash
4,786,752	Catalyst recovery and recycle of catalysts in pseudocumene oxidation process
4,786,753	Oxidation process for the manufacture of aromatic acids from alkylaromatic compounds
4,797,497	Trimellitic anhydride purification process
4,845,274	Oxidation of polyalkylaromatics
4,845,275	Trimellitic acid process
4,876,386	Process for the oxidation of di- or trimethylbenzenes in the presence of cobalt and manganese from oxidation residue incinerator ash
4,906,772	Process for production of polycarboxylic aromatic acids
4,948,921	Process for the production and recovery of trimellitic acid
4,950,786	Method for making 2,6-naphthalene dicarboxylic acid
4,992,579	Process for the production of trimellitic acid
5,004,830	Process for oxidation of alkyl aromatic compounds
5,012,030	Process for preparing polybutenes with increased reactivity
5,095,141	Process for pseudocumene oxidation to trimellitic acid with mother liquor recycle
6,696,604	Addition of mineral acids or salts thereof to a TMA production process
7,378,544	Anthracene and other polycyclic aromatics as activators in the oxidation of aromatic hydrocarbons
8,163,954	Process and catalyst for oxidizing aromatic compounds
8,519,167	Method for the preparation of 2,5-furandicarboxylic acid and esters therof

8,624,055	Process and catalyst for oxidizing aromatic compounds
8,921,256	Catalysts for petrochemical catalysis
8,962,517	Nanowire catalysts and methods for their use and preparations
9,040,762	Catalysts for petrochemical catalysis

Current Patent Applications

20090069594	Process and catalyst for oxidizing aromatic compounds
20090118536	Process for the Production of Aromatic Carboxylic acids in Water
20120041246	Nanowire Catalysts
20130158322	Polymer Templated Nanowire Catalysts
20140107385	Oxidative Coupling of Methane Systems and Methods
20140121433	Catalytic Forms and Formulations
20140274671	Catalysts for Petrochemical Catalysis
20150087875	Nanowire Catalysts and Methods for their use and preparation
20150224482	Catalysts for Petrochemical Catalysis
20150232395	Ethylene-to-liquids systems and methods
20150314267	Heterogeneous Catalysts
20150321974	Oxidative Coupling of Methane Systems and Methods

Wayne P Schammel Publications

Totally synthetic heme protein models based on complexes with superstructure ligands

Wayne P. Schammel, Kristin S. B. Mertes, Gary G. Christoph, Daryle H. Busch

Synthesis and structure of totally synthetic coboglobin models

James C. Stevens, Patricia J. Jackson, Wayne P. Schammel, Gary G. Christoph, Daryle H. Busch

Synthesis of superstructure ligands using a novel methyl vinyl ether functional group

Wayne P. Schammel, L. Lawrence Zimmer, Daryle H. Busch

Molecular species containing persistent voids. Template synthesis and characterization of a series of lacunar-nickel(II) complexes and the corresponding free ligands

Daryle H. Busch, Dennis J. Olszanski, James C. Stevens, Wayne P. Schammel, Masaaki Kojima, Norman Herron, L. Lawrence Zimmer, Katherine A. Holter, Jan Mocak

Simultaneous synthesis, separation and characterization of metal complexes with monomeric lacunar ligands and dimeric ligands capable of bimetallic coordination

Daryle H. Busch, Susan C. Jackels, Robert C. Callahan, Joseph J. Grzybowski, L. Lawrence. Zimmer, Massaki. Kojima, Dennis J. Olszanski, Wayne P. Schammer, James C. Stevens, . et al.

Dinuclear iron(II) complexes showing unusual reversible oxidation-reduction behavior with dioxygen,

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