

BIOGRAPHICAL SKETCH

Remi Oki, Phone: (01) (936) 261-3105, E-mail: aroki@pvamu.edu

- **A. Research Interests:**

- i. Synthesis of Inorganic materials for bone repairs and bone tissue engineering Bioactive glasses, are able to bond to both bone and soft tissue and can stimulate bone growth. The poor mechanical properties of bioglass monoliths have limited their application to the reconstruction of non-stress bearing bones. Mechanical properties of bioglass can be significantly improved when organic polymers are chemically integrated with it to yield hybrid composites. Our research interest in this area involves the design 3D-macroporous composite materials that will combine the excellent bone bonding ability of bioglass with the desired mechanical properties of polymers.

Our group is interested in the synthesis by sol-gel techniques of 3-D macroporous hybrid materials incorporating inorganic bioglass (CaO-SiO₂-ZnO) with a variety of organic phases

- a. Biocompatible organic polymers (e.g. poly(methylmethacrylate) with triethoxysilane functional groups)
- b. Functionalized single-walled carbon nanotubes (F-SWNTs) covalently attached to bioglass for improved mechanical properties
- c. Block co polypeptide hydro gels

To develop structure-property relationships that describe how the material porosity, pore size distribution, and synthetic variables affects, physical, biological and mechanical properties of the composite and it's in

- ii. Novel heterogeneous catalyst system based on open framework cobalt phosphate, metal oxides and cobalt complexes immobilized on silica support.

Open-framework, microporous metal phosphates are of great interest because of their rich structural chemistry, and potential applications in catalysis, and ion exchange properties. We are interested in developing novel heterogeneous catalysts based on this class of compound. We are particularly interested in the synthesis of 3-D open framework of [Amine][(M_xCo_{1-x})_y(PO₄)_z], where M= Zn or V.

Conduct a systematic study on how the structure directing agent and the M:Co: P ratio, affect the framework structures. and investigate the potential applications of these transition metal substituted cobalt phosphates as novel catalysts in fine chemicals and pharmaceuticals.

- iii. Silane Functionalized Carbon Nanotubes for Surface Coatings and Ceramics Composite Processing

Taking the advantage of unique mechanical, thermal and electrical properties of carbon nanotubes (CNTs) in the ceramic composites and metal coatings applications is hindered by weak adhesion of CNTs to the matrix material. The surface adhesion properties of CNTs can be improved through their sidewall functionalization with the alkyl chains terminated with the alkoxy silane groups. These groups will provide a capability for functionalized CNTs to adhere to the oxidized metal surfaces, such as aluminum and steel, by forming strong covalent bonds with the surface. Thus, multi-layers can be formed by spraying the dispersed f-CNTs onto metal surfaces for corrosion resistant, heat dissipation and hydrophobic coatings applications.

The silane functionalized CNTs will become compatible with the oxide and nitride ceramics since their surfaces are usually terminated with the OH or NH₂ groups, respectively.

Covalent bonding to these groups will help to achieve a uniform dispersion of predominantly unroped f-CNTs in the ceramic matrixes for fabrication of composites with enhanced mechanical properties. This can be done by a sol-gel chemical processing. Controlled thermal treatment can be done in order to partially or completely remove the functional groups from the f-CNTs to provide for electrical conductivity of the CNT-ceramics.

B. Education

University of Ibadan (Nig.)	Chemistry	B.S. (Hons.)	1980
University of Wyoming	Inorganic Chemistry	Ph.D.	1990
Southern Methodist University	Post. Doctoral fellow.		1990-92

C. Appointments

Professor & Head, Department of Chemistry, Prairie View A & M University, TX 09/2003-present
Professor, Long Island University, Chemistry and Biochemistry Department, NY 09/2001 to 08/2003
Chair of the Chemistry and Biochemistry Dept. Committee for Appt., Reappt. Tenure. 09/2000 to 08/2003
Associate Professor, Long Island University, Brooklyn, NY (09/1996-09/2001). Tenured 1997
Program Director, Long Island University's Minority Biomedical Research Support 1995-2002
Assistant Professor, Long Island University, Chemistry department, Brooklyn, NY 09/1992-09/1995

D. Awards and Honor

1. Mayoral Appointee to the Old Bridge Township Environmental Commission, NJ, 2002-2003
2. American Chemical Society Award for Outstanding Service, Nov. 2002
3. Long Island University's Trustees Award for Lifetime Scholarly Achievement, 2001-2002
4. American Association of Cell Biologist Minority Visiting Professor Award, Summer 2001
5. U.S.A. Fulbright Senior Scholar Award, 1998-1999

E. Former and Current Students and where they are

Former/Current Research Students

1. Ms Diahanne Enniss(1994-97)
2. Faina Tarasyuk (1997-1998), MS
3. Alla Tandilashvilli, MS 2001
4. Michael Yurchenko, 1997 BS
5. Ghassan Abdelaziz MS 1999
6. Jesus Sanchez, MS 1996
7. Terri Lester BS (1995)
8. Ravi Bommarreddy, MS 1994
9. Blanca Gilbes, MS 2002
10. Olga Sokolova, 2000
11. Bushra Parveen, MS 2000
12. Saffiyyah Hossain, BS 2002
13. Jide Alawode BS 2004
14. Rohan Barnett BS 1994
15. Qiu Xiangdong MS 2004
16. Edigin Osayamen(undergrad. Jnr)
17. Jose Lueviano(Underg. Jnr)
18. Paul Bonham BS 2005

Current Position

MD, Fellow at Mayo (Minnesota)(Medical Doctor)
Chemistry Teacher, High School, NY
Chemistry Teacher, High School, NY
Ph.D Chemistry, New York University
Pharm. D. Long Island university (Pharmacist)
Science Teacher, Bronx NY
MD (Temple)
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Ph.D Candidate, Chem. Dept. University of South Dakota
Ph.D, NYU (May 2007 Expected defense)
Instructor, NY Community College
Ph.D Student, Kansas State University 2004-
Ph.D Student, Kansas State University 2005-
Chemist, Pfizer, Brooklyn NY 1996-Present
Arab Oil Co 2006-Present
Current Student
current Student
Currently in Masters Program