



**In the Name of God**  
**Scientific Resume**

**I. PERSONAL INFORMATION:**

Name: Rasoul Sarraf-Mamoory

Date of Birth: 1956

Place of Birth: Isfahan - Iran

Marital Status: Married

Address: Ceramic Group, Department of Materials Engineering,  
Tarbiat Modares University

P.O.Box. 14115-113, Tehran, Iran

Tel: +9821 82883308

Fax: +9821 82884390

E-mail: rsarrafm@modares.ac.ir

**II. EDUCATIONAL RECORDS:**

<u>Degree</u>	<u>Institution</u>	<u>Field</u>	<u>Date</u>
B.Sc	Tehran	Metallurgy	1984

	University		
<b>M.Sc</b>	Tehran University	Metallurgy	1986
<b>Ph.D.</b>	McGill University Canada	Powder Metallurgy	1992

### **III. ACADEMIC EXPERIENCES:**

Assistant Professor, Tarbiat Modares University, Tehran, Iran, (Since 1992)

Head of Materials Engineering Department, Tarbiat Modares University, 1997-2000.

Head of Ceramic Group, Materials Engineering Department, Tarbiat Modares University, 1993-1997, 2000-2002, 2005-2007, 2013-Now.

### **IV. MEMBERSHIP OF SCIENTIFIC SOCIETIES:**

1. Member of Iranian Ceramic Society
2. Member of Iranian Metallurgical Engineering Association
3. Member of editorial board of high energetic materials journal.
4. Member of editorial board of Iranian ceramic journal.

### **V. REFEREE FOR JOURNAL ARTICLES:**

1. International Journal of Engineering
2. Iranian journal of Chemistry and Chemical Engineering
3. International Journal of Engineering Science
4. Journal of Engineering, Isfahan university of technology
5. Journal of Nuclear Science & Technology

6. Amirkabir Journal of Science and Research
7. Journal of Faculty of Engineering, University of Tehran
- 8- Journal of Nanoparticle Research
- 9- Journal of Cluster Science
- 10- Journal of Advanced Materials and Processing
- 11- Journal of Molecular Structure
- 12- Iranian Journal of Materials Science and Engineering
- 13- Powder Technology
- 14- Journal of Faculty of Engineering
- 15- International Journal of Engineering Science
- 16- Nanoscience & Nanotechnology-Asia

## **VI. RESEARCH INTERESTS:**

1. Recovery of metals or ceramic materials from minerals, waste materials, or chemical derivatives.
2. Manufacturing of metallic & ceramic parts like detector, dosimeter, magnet,... by powder technology and nanotechnology methods.
3. Preparation of metallic & ceramic powders/ nano powders by physical, chemical, and mechanical methods.

## **VII. JOURNAL PAPERS**

- 1- R. Sarraf-Mamoory, Materials G. P. Demopoulos and R. A.

- DrewMetallurgical and Transactions B, 1996, pp. 577-584.
- 2- R. Sarraf-Mamoory G. P. Demopoulos and R. A. L. Drew, Metallurgical and Materials Transactions B, 1996. pp. 585-594.
- 3- A.A.Babaluo, M.Kokabi, M.Manteghian, R. Sarraf-Mamoory, Journal. of the European Ceramic Society, 2004, pp. 3779-3787.
- 4-M.Mashhadi, R. Sarraf-Mamoory, S. Baghshahi, International Journal of Engineering science (IUST), 2005, pp. 9-14.
- 5- R.sarraf-Mamoory, N.Riahi-Noori, American Ceramic Society Bullrtin, Sep. 2005, pp. 9401-9407.
- 6- J. Moghaddam, R. Sarraf-Mamoory, Y. Yamini, M. Abdollahy, Industrial Engineering Chemical Research, 2005, pp. 8952-8958.
- 7- J. Moghaddam, R. Sarraf-Mamoory, M. Abdollahy, Y. Yamini, Separation and Purification Technology, 2006, pp. 157-164.
- 8- R. Sarraf-Mamoory, S. Nadery, N. Riahi-Noori, Chemical Engineering Communications, 2007, pp. 1022-1028.
- 9 - N. Riahi-Noori<sup>1</sup> , R. Sarraf-Mamoory<sup>2</sup>- S. Mehraeen<sup>3</sup> "Effect of Materials Design on Properties of Porcelain Insulators", 2007, 9201-9205.
- 10 - B. Shahbahrami, R. Sarraf Mamoory, E. Ehsani, "Self Spreading High Temperature Synthesis of TiB<sub>2</sub> Powder", Materials Science-Poland, vol 25, No. 3, 2007, 719-731.
- 11 - S. Ghader, M. Manteghian, M. Kowkabi, R. Sarraf-Mamoory, "Preparation of Truncated Triangular Silver Nanoparticles by a Simple and Rapid Method in Aqueous Solution", Polish Journal of Chemistry, 81, 1555-1565 (2007).
- 12 - S. Ghader, M. Manteghian, M. Kowkabi, R. Sarraf-Mamoory, "Induction Time of Reaction Crystallization of Silver Nanoparticles", Chemical Engineering and Technology, 2007, 30, No. 8, 1-6.
- 13 - A. Najafi Maryamnegary, R. Sarraf-Mamoory, A. Simchi, N. Ehsani, "Determination of the physical and mechanical properties of iron-based materials produced by microwave sintering", Powder metallurgy and metal ceramics, 2007, 46, No. 9-10,
- 14 - N. Riahi-Noori , R. Sarraf-Mamoory, A. Mehdikhani, A. Hadian, "The effect of Al<sub>2</sub>O<sub>3</sub> on physical and electrical properties of ZnO varistors", Journal of

Ceramic Prossesing Research, 2008, 9, No. 2, 107-110.

15 - N. Riahi-Noori , R. Sarraf-Mamoory, P. Alizadeh, A. Mehdikhani, "Synthesis of ZnO nano Powder by a Gel Combustion Method, Journal of Ceramic Prossesing, 2008, 9, No. 3, 246-249.

16 - A. Rezaee, Gh. Pour Taghi, A. khavanin, R. Sarraf-Mamoory, M. T. Ghaneian, Godeini, "Photocatalytic Decomposition of Gasous Toluene by TiO<sub>2</sub> Nanoparticles Coated on Activated Carbon", Iranian journal of environment and science engineering, 2008, 5, No. 4, 305-310.

17- A. Najafi. M, R. Sarraf-Mamoory, N. Riahi Noori, "Looking at MW Sintering and Nickel Diffusion", Metal powder Report, 2009, 30-32.

18 - N. Hosseinabadi, R. Sarraf Mamoory, B. K. Kaleji, "Synthesis, Phase Study and Magnetic Characterisation of Co50Fe40Cu10 Ternary Alloy Nanopowders Prepared by Mechanochemical Alloying Process", powder metallurgy, 2008, 2010, 260-264.

19 - B. K. Kaleji, R. Sarraf-Mamoory, N. Hosseinabadi, "Synthesis of Co<sub>3</sub>W-Cu Composite Nanopowders by Mechanical Milling and Hydrogen Reduction Process", powder metallurgy, 2008, 2010, 174-176.

20 - I. Foroutan, R. Sarraf-Mamoory, N. Hosseinabadi, "Alumina - Copper joining by the Sintered Metal Powder Process", Ceramics International, 2010, 741-747.

21- I. Foroutan, R. Sarraf-Mamoory, N. Ranjbar, "Investigating Effect of Temperature and Time of Metalised Layer Sintering by SMPP Method on Tensile Strength and Thermal Shock Resistance", Materials science and technology, 2009, 478-492.

22 - M. safaei, M. Rashidzadeh, R. Sarraf-Mamoory, and M. Manteghian, "Synthesis and Characterization of one-dimensional Titanate Nanostructures via Alkaline Hydrothermal Method of Low Surface Area TiO<sub>2</sub>-Anatase", journal of ceramic processing research, 2010, 277-280.

23 - M. safaei, , R. Sarraf-Mamoory, M. Rashidzadeh and M. Manteghian, "A Placket Burman Desighn in Hydrothermal Synthesis of TiO<sub>2</sub>-derived Nanotubes", j. porous Mater, 2009, 719-726.

24- M. safaei, , R. Sarraf-Mamoory, M. Rashidzadeh, and M. Manteghian, "The Interactive Effect of Agitation Condition and Titania Particle Size in

Hydrothermal Ssynthesis of Titanate Nanostructures”, Journal of nanoparticle research, 2010, 2723–2728.

25 - A. Baladi, R. Sarraf-Mamoory, "Investigation of Different Liquid Media and Ablation Times on Pulsed Laser Ablation Synthesis of Aluminum Nanoparticles", Applied surface science, 2010, 7559-7564.

26- B. Koozegar Kaleji, R. Sarraf-Mamoory, S. Sanjabi, “Photocatalytic Evaluation of a Titania Thin Film on Glazed Porcelain Substrates via a TiCl<sub>4</sub> Precursor”, Reac. Kinet. Mech. Cat., 2011, 289–298.

27- B. Koozegar Kaleji, R. Sarraf-Mamoory, K. Nakata, A. Fujishima, “The Effect of Sn Dopant on Crystal Structure and Photocatalytic Behavior of Nanostructured Titania Thin Films”, J. Sol-Gel Sci. Technol., 2011, 99–107.

28- F. Nikanjam, R. Sarraf-Mamoory, N. Riahi-Noori, “Optimizing Parameters in Synthesis of LiF Nanoparticles via Sol-gel Method”, NANO: Brief Reports and Reviews, Vol. 6, No. 6 (2011) 575–581.

29 - B. Koozegar Kaleji, R. Sarraf-Mamoory, A. Fujishima, “Influence of Nb Dopant on the Structural and Optical Properties of Nanocrystalline TiO<sub>2</sub> Thin Films”, Materials chemistry and physics, 2012, 210– 215.

30- B. Koozegar Kaleji, R. Sarraf-Mamoory,” Nanocrystalline Sol–gel TiO<sub>2</sub>–SnO<sub>2</sub> Coatings: Preparation, Characterization and Photo-catalytic Performance”, Materials research bulletin, 2012, 362–369.

31- B. Sadeghi, R. Sarraf-Mamoory, H. Shahverdi, N. Hosseinabadi, Iranian Journal of Chemistry and Engineering, Iranian Journal of Chemistry & Chemical, 1390.

32- A. Safi-najafabadi, R. Sarraf-Mamoory, Z. Karimi, Materials Research Bulletin, 2012.

33- Rostam zadeh, shahverdi, Sarraf-Mamoory, Advanced Materials Research, 2010.

34- kargar Razi, Khosravi, Sarraf-Mamoory, international journal of nano dimension, 2010.

35- kargar Razi, Azadi, Sarraf-Mamoory, international journal of nano dimension,

2010.

36- kargar Razi, bani Hashemi, Sarraf-Mamoory, international journal of nano dimension, 2010.

37- N. Riahi-Noori , R. Sarraf-Mamoory, A. Mehdikhani, Digest Journal of Nanomaterials and Biostructures, 2011.

38- A. Baladi, R. Sarraf Mamoory, International Journal of Modern Physics Conference Series, 2012.

39- B. Sadeghi, R. Sarraf-Mamoory, H. Shahverdi, Journal of Nanomaterials, 2012.

40- Mojaver, Shahverdi, sarraf-Mamoory, Journal of alloys and compounds, 1392.

41- N. Hosseinabadi, R. Sarraf Mamoory, A. M. Hadian, Ceramic International, 2014.

42- Ghanbari, Sarraf-Mamoory, Sabbagh zadeh,Chehregani, Malekfar, international journal of optics and photonics, 2013.

43- Safa, Sarraf-Mamoory, Azimi Rad, Advanced Materials Research,2014.

44- Safa, Sarraf-Mamoory, Azimi Rad,.Physical E-Low Dimensional Systems & Nanostructures, 2014.

45- Safa, Sarraf-Mamoory, Azimi Rad, Journal of Sol Gel Science and technology, 2015.

46- Rastegar, Mousavi, Shojaosadati, Sarraf-Mamoory, hydrometallurgy, 2015.

47- tavakoli, Sarraf-Mamoory, Zarei, Journal of ceramic processing research, 2015.

48-Dabir, Sarraf-Mamoory, ...., Materials & Design, 2016.

49- Tavakoli, Sarraf-Mamoory, Zarei, Iranian Journal of Chemistry and Chemical Engineering, 2016.

50- Tavakoli, Sarraf-Mamoory, Zarei, Journal of Advanced Materials and Processing, 2015.

## **VIII. PAPERS PRESENTED IN CONGRESSES AND SEMINARS**

- 1- R. Sarraf - Mamoory, G. P. Demopoulos, R.A.L. Drew, Oral Presentation, First Canadian Materials Science Conf., Kingston Ontario, 1989.
- 2- R. Sarraf - Mamoory, G. P. Demopoulos, R.A.L. Drew, Oral Presentation, CIM 29 Conf. of Metallurgisis, Hamilton, Ontario, 1990.
- 3- R. Sarraf - Mamoory, G. P. Demopoulos, R.A.L. Drew, First Chemical Engineering Congress, 1994, pp. 33-36 (in Persian)
- 4- R. Sarraf - Mamoory, J. Moghaddam, First Non- Ferrous Metallurgical Seminar, 1996, pp. 498-508 (in Persian)
- 5- R. Sarraf - Mamoory, A. Vaziry, First Non - Ferrous Metallurgical Seminar, 1996, pp. 513-520 (in Persian)
- 6- R. Sarraf - Mamoory, M. Rajabi, A. Khodabandeh, First Annual Congress of Metallurgical Engineers Society, 1997, pp. 447-454 (in Persian)
- 7- R. Sarraf - Mamoory, J. Noorian, First Annual Congress of Metallurgical Engineers Society, 1997, pp. 319- 326 (in Persian)
- 8- R. Sarraf- Mamoory, M. M. Mohebbi, Third Ceramic Society Congress, 1998, pp. 31-36(in Persian)
- 9- R. Sarraf - Mamoory, R, Hoseiny - Molla, Welding Processing in Advanced Industries, 1998, pp. 103-109 (in Persian)
- 10- R. Sarraf - Mamoory, F. Fooladi, D. Rezaii, Proceeding PM Auto 99, Isfahan, Iran, 1999.
- 11- R. Sarraf - Mamoory, A.R. Khodabandeh, Proceeding PM Auto 99, Isfahan, Iran, 1999.
- 12- R. Sarraf - Mamoory, D. Rezaii - Sabet, Second Non-Ferrous Metallurgical Seminar, 2000, pp. 679-686 (in Persian)
- 13- V. Asadi, R. Sarraf- Mamoory, First Annual Congress of Metallurgical Engineers Society, 2000, pp. 977-985 (in Persian)
- 14- R. Sarraf - Mamoory, A. Hasany, M. Ghodsian, B. Ahmady, Fourth

International Conference on coasts, ports and Marine Structures, 2000, pp. 25-32.

15. R. Sarraf-Mamoory, A. Faeghinia, 5th Annual Congress of Metallurgical Engineers Society, 2001, pp. 68-79
16. S. Ahmadi, R. Sarraf-Mamoory, T. Shahrabi, A. Ziazadeh, First Congress on Rock Mechanics, 2001, pp. 243-256
17. M. Sadi, R. Sarraf-Mamoory, Ali Beitollahi, Fourth Ceramic Society Congress, 2002, 147-158
18. R. Sarraf-Mamoory, M. Nasrabadi, Fourth Ceramic Society Congress, 2002, 288-295
19. M. Mashhadi, R. Sarraf-Mamoory, S. Baghshahi, Fourth Ceramic Society Congress, 2002, 346-355
20. R. Vatandoost, R. Sarraf-Mamoory, 5th Iranian Manufacturing Engineering Conference, 2002, 817-826
21. R. Sarraf-Mamoory, N. Riahi-Noori, K. Mohammadi, 7th Annual Congress of Metallurgical Engineers Society, 2002, 1048
22. R. Sarraf-Mamoory, R. Hosseini, M. H. Omrani, "Proceeding PM Auto 2002", Isfahan, Iran, 2002
23. R. Sarraf-Mamoory, R. Hosseini, E. Binaeibash, "Proceeding PM Auto 2002", Isfahan, Iran, 2002
24. R. Sarraf-Mamoory, M. H. Nooshabadi, R. Hosseini, "Proceeding DFPM 2002", Stara Lesna, Oslovac Republic, 2002, pp. 22-36
25. R. Sarraf-Mamoory, N. Riahi-Noori, "Proceeding APT 2003", pp. 193-198
26. M. Kokabi, A. Babalou, M. Manteghian, R. Sarraf-Mamoory, 8th national conference on chemical engineering, 2003
27. A. Babalou, M. Kokabi, M. Manteghian, R. Sarraf-Mamoory, Rac-Ri5, 2003
28. H. Binaie, R. Sarraf-Mamoory, 7th Annual Congress of Metallurgical Engineers Society, 2003, pp. 623-630
29. R. Sarraf-Mamoory, M. Khabbaz, H. Asadi, 8th Annual Congress of

Metallurgical Engineers Society, 2004, pp. 1525-1532

30. R. Sarraf-Mamoory, S. Naderi, N. Riahi-Noori, 5th Ceramic Society Congress, 2004, 378-383

31. R. Sarraf-Mamoory, M. Khabbaz, "Proceeding PM Auto 2005", Isfahan, Iran, 2005, pp. 207-217 .

32. R. Vatandoost, R. Sarraf-Mamoory, 4<sup>th</sup> Balkan Conference on Metallurgy-PROGRAMM, Poster Session, 2006.

33- J. Moghaddam, R. Sarraf-Mamoory, XXIII International Mineral Processing Congress, 2006, pp. 1381-1388.

34- R. Sarraf Mamoory, N. Hosseinabadi and B. Kozegar Kaleji, International Congress on Nanoscience & Nanotechnology, ICNN 2006.

35-A. Nadjafi-Maryam Negari, R. Sarraf-Mamoory, J.Sadreameli, A.Simchi, N. Ehsani, PM Asia 2007 Conference and Exhibition, 2007, pp. 603-612.

36- R.Sarraf-Mamoory, N. Hossein-Abadi, B. Koozegar-Kaleji, PM Asia 2007 Conference and Exhibition, 2007, pp. 621-628.

37- N. Riahi-Noori, R. Sarraf-Mamoory, M. Mehraen, ICMAT 2007, Singapore

38- N. Riahi-Noori, R. Sarraf-Mamoory, A. Hadian, P. Alizadeh, , A. Mehdikhani, Second Conference on Nanostructures, 2008.

39 - A. Safi, R. Sarraf-Mamoory, H. Ahmadi, Second Conference on Nanostructures, 2008.

40- A. Maryamnegari, R. Sarraf-Mamoory, J. Sadrameli, N. Ehsani, A. Simchi, 5th International Conference on powder metallurgy, 2008.

41- M. Kargar Razi, S. Azadi, A. Moradi, R. Sarraf-Mamoory, XXIV International Mineral Processing Congress, 2008.

42- M. Kargar Razi, M. Khosravi, R. Sarraf-Mamoory, A. Mohammadi, XXIV International Mineral Processing Congress, 2008.

43- A. Safi, R. Sarraf-Mamoory, H. Ahmadi, J. Rezapour, 2nd International Congress on nanoscience and nanotechnology, 2008.

44- A. Rostamzadeh, H. Shahverdi, R. Sarraf-Mamoory, 2nd International Congress on nanoscience and nanotechnology, 2008.

- 45- A. Rostamzadeh, H. Shahverdi, R. Sarraf-Mamoory, ōAMPT, 2008.
- 46- A. baladi, R. Sarraf-Mamoory, Third Conference on Nanostructures, 2009.
- 47- A. baladi, R. Sarraf-Mamoory, Fifth International Conference on Mems Nano, and Smart System, 2009.
- 48- N. Riahi-Noori, R. Sarraf-Mamoory, A. Mehdikhani, Fifth International Conference on Mems Nano, and Smart System, 2009.
- 49- Trends in Nanotechnology" (TNT2009, 2009.
- 50 M. safaei, R. sarraf-Mamoory, M. Rashidzadeh, M. Manteghian, The 6th International Chemical Engineering Congress & Exhibition (ICHEC 2009), 2009.
- 51- A. baladi, R. Sarraf-Mamoory, ōSecond international conference on ultrafine grained and nanostructured materials, 2009.
- 52- M. safaei, R. sarraf-Mamoory, M. Rashidzadeh, M. Manteghian, International onference on Nanotechnology, Fundamentals and Application, 2009.
- 53- B. Koozegar Kaleji, R. Sarraf-Mamoory, S. Sanjabi, , International onference on Nanotechnology, Fundamentals and Application, 2009.
- 54- F. Nikanjam, R. Sarraf-Mamoory, N. Riahi-Noori, Internation conference on Nanostructured Materials - Nano 2010, 2010.
- 55- A. Safi, R. Sarraf-Mamoory, Z. karimi, 3rd IC4N-2011, 2011.
- 56- N. Riahi-Noori, R. Sarraf-Mamoory, A. Mehdikhani, ICBSEBEE, 2011.
- 57- B. Sadeghi, R. Sarraf-Mamoory, H. Shahverdi, INternational Conference on Nanostructure & Nanomaterials, 2011.
- 58- B. Sadeghi, R. Sarraf-Mamoory, H. Shahverdi, N. Hosseinabadi, 4th International Conference on Nanostructures (ICNS4), 2012.
- 59- B. Koozegar Kaleji, R. Sarraf-Mamoory, ŋ th International Congress on Nanoscience and Nanotechnology, 2012.
- 60- S. Shajari, R. Sarraf-Mamoory, International Conference on Nanomaterials: Applications and Properties, 2012.
- 61- F. Dabir, R. Sarraf-Mamoory, N. Riahi-Noori, , International Conference on Nanomaterials: Applications and Properties, 2012.

- 62- M. Montazeripour, N. Riahi noori, A. Mehdikhani, R. Sarraf-Mamoory, International Conference on Nanomaterials: Applications and Properties, 2012.
- 63- F. Dabir, R. Sarraf-Mamoory, ...International Conference of nanotech, Italy, 2015.
- 64- F. Dabir, R. Sarraf-Mamoory, ...Asian Nano Forum Congress, 2015.
- 65- R. Sarraf-Mamoory, A. H. Mirtaleb, International conference and Exhibition on Advanced Nano materials (ICANM2017), 2017.
- 66- R. Sarraf-Mamoory,M. Azizi MalakAbadi, International conference and Exhibition on Advanced Nano materials (ICANM2017), 2017.

## **IX. SEARCH PROJECT LEADER:**

1. Design and manufacturing of SiC ceramic refractory, executed, 1999-2000, Tarbiat Modarres University
2. Documentation of bearing manufacturing technology for Peykan car, 1997-1999, SAPCO, Tariat Modares University.
3. Manufacturing of electricity counter magnet, (AlNiCo), 2000-2002, ministry of industries & Tarbiat Modares University.
4. Design and manufacturing of magnetic field-assistant heat treatment furnace, 2002-2004, ministry of Industries & Tarbiat Modares University.
5. Manufacturing of Cu-Graphite composites, (brush), 2000-2001, Ministry of Industries & Tarbiat Modares University.
6. Recovery of Nikel & Cobalt processing from Eghlid mine, ministry of science & Tarbiat Modares University.
7. Preparation of LiF nanopowder for dosimeter pellets, industrial development and renovation organization of iran & Tarbiat Modares University.
8. Preparation of LiF dosimeter pellet, Tarbiat Modares University.
9. Preparation of nano yttria stabilized powder, Tarbiat Modares University.
10. Manufacturing of nanostructure alumina –zirconia composite by sinter forge method.

11. Documentation of seat and guide valve seat by powder metallurgy method.
- 12- Iron alloy powder preparation for cutting rock segment manufacturing.
- 13-TLD-600 & TLD-700 pellet manufacturing.
- 14- Design & manufacturing of a press for pellet compaction.
- 15- Nano hard metal part manufacturing by rapid hot pressing.
- 16- Powder metallurgy manufacturing of amorphous parts.
- 17- Silicon based parts manufacturing.

## **X. BOOKS**

1. Translation, “Diffusion in Solids” (by P. Shewmon), Tarbiat Modares University, 1996 & 2017.
2. Introduction and tribology properties of nanostructured advanced ceramics, 2016.

## **XI. TAUGHT COURSES:**

- 1) Drying & Firing of Ceramics (B. Sc.)
- 2) Diffusion in solids (M. Sc.)
- 3) Advanced Kinetics (M. Sc.)
- 4) Ceramic Processing before firing (M. Sc)
- 5) Non- oxide Ceramics ( M. Sc.)
- 6) Oxide Ceramics ( M. Sc.)
- 7) Ceramic Pigments ( M. Sc.)
- 8) Nano Particles Synthesis methods( M. Sc.)
- 8) Advanced Ceramics (Ph. D.)
- 9) Powder Technology (Ph. D.)
- 10) Advanced Nanotechnology (Ph. D.)
- 11) Micro and Nano powder Preparation (Ph. D.)