1.	**Name**	Dr. Ajay Kumar
2.	**Designation**	Head & Associate Professor, DASH
	Date of Birth	29.12.1960
4.	**Education Qualification**	Ph. D. (Physics); M. Sc. (Physics)

Email Id:
ajaykumar_6t@rediffmail.com

5.	**Work Experience**	**Teaching and Administrative :**	
		24 years	
		Research : 31 years in the area of Solid State Ionic Materials & Devices	

		Others : NIL		
6.	**Area of Specializations**	Physics/ Material Science		
7.	**Subjects Teaching at**	**(a) Graduate Level**		Engineering Physics
		(b) Post Graduate Level **M. Tech. ESE, Part Time**		Physics of Environment Pollution Monitoring Technique Energy Technology & Alternative Energy Sources
8.	**Total Number of Research Publications (Annexure-A)**	**Published**	32	**Communicated**

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9.	**No. of Students Guided**	
	Master's	02
	Ph.D	02
10.	**Academic Achievements and Awards**	*Junior Research Fellowship, Special Assistance Programme of UGC (India), 1986-1988 *Junior Research Fellowship, Department of Non-conventional Energy Sources (India), 1988-1990 *Senior Research Fellowship, Council of Scientific & Industrial Research (CSIR) (India), 1990-1991 *Research Associate, CSIR (India), 1992-1995

11.	**Projects Carried out**	1. A study of microwave processing of partially stabilized zirconia (PSZ), Ministry of Science and Technology, Govt. of India, Sponsored, 2001-2004 2. Modernisation and Upgradation of LASER Laboratory, AICTE, New Delhi, under MODROB Scheme, 2003-2005	
12.	**Projects in Hand**	NIL	
13.	**Applied Project**	NIL	

15.	**Short-Term Courses** **Organised as a faculty**	1. Short Term Course on Engineering Materials, sponsored by TEQIP (Phase-II), at SBS State Technical Campus, Ferozepur, 17th Dec-21st Dec, 2012. 2. Faculty Development Programme on Analytical Techniques for Detection of environmental Pollutants, sponsored by TEQIP-II, at SBS State Technical Campus, Ferozepur, 16-27 Dec., 2013.	
16.	**Short-Term**	1. National Workshop-cum-Training Course on Digital Electronics & Microprocessors, Physics Deptt., BHU, Varanasi, 15-27 Dec, 1986. 2. Presented paper "Ion transport mechanism and role of defects in ADP and KDP" in 2nd National Seminar on Defects in Insulating Solids held at IIT, Madras, 25-27 Feb. 1988. 3. 37th GOC, Academic Staff College, GNDU, Amritsar, 25th Nov-22nd Dem, 1998. 4. 18th Refresher Course on Solid State Physics & Material Science, Academic Staff College, RDV (University), Jabalpur, 04-23 March, 2002. 5. Short Term Training Programme on Total quality Management & ISO-9000 Quality Systems, sponsored by AICTE/ISTE at SBS College of Engg & Tech, Ferozepur, 01-12 July, 2002. 6. Short Term Programme on Computer Aided Design, sponsored by NITTTR,Chandigarh at SBS College of Engg & Tech, Ferozepur, 14-18 March, 2005. 7. Short Term Programme on MATLAB, sponsored by NITTTR, Chandigarh at SBS College of Engg & Tech, Ferozepur, 30th Jan-3rd Feb, 2006. 8. Short Term Programme on Advanced AUTOCAD, sponsored by NITTTR, Chandigarh at SBS College of Engg & Tech, Ferozepur, 27th Feb-3rd March, 2006. 9. Short Term Programme on Laser Science & Technology at NITTTR, Chandigarh 21st March-25th March, 2011. 10. Short Term Course on Environment Management in Process Industries, sponsored by AICTE/ MHRD at Dr. B. R. Ambedkar National Institute of Technology, Jalandhar, 5th June-9th June, 2011. 11. Staff Development Programme on Intelligent Computational Techniques, sponsored by AICTE, at SBS College of Engg & Tech, Ferozepur, 4thJuly-15th July, 2011. 12. Staff Development Programme on Multi-criteria Optimization Tools in Research, sponsored by AICTE, at SBS State Technical Campus, Ferozepur, 21st May-1st June, 2012. 13. Short Term Course on Applied Soft Computing, sponsored by	

	Courses Attended	TEQIP (Phase-II), at SBS State Technical Campus, Ferozepur, 26th Nov-30th Nov, 2012. 14. Short Term Course on Engineering Materials, sponsored by TEQIP (Phase-II), at SBS State Technical Campus, Ferozepur, 17th Dec-21st Dec, 2012. 15. Faculty Development Programme on Nature Inspired Computational Intelligence, sponsored by AICTE-TEQIP, at SBS State Technical Campus, Ferozepur, 6th May-17th May-1st, 2013. 16. Short Term Course on optical Fibers: Communication & Sensing Applications at NITTTR, Chandigarh 15th July-26th July, 2013. 17. Faculty Development Programme on New Computting & Emerging Technologies in ICT, sponsored by AICTE-TEQIP, at SBS State Technical Campus, Ferozepur, 26th -30th August, 2013. 18. Faculty Development Programme on Soft Skills for Technical Teachers, sponsored by AICTE-TEQIP, at SBS State Technical Campus, Ferozepur, 2-6 Sept., 2013. 19. Faculty Development Programme on Recent Trends in Optical & Wireless Communication System Design, sponsored by IIIC-TEQIP, at SBS State Technical Campus, Ferozepur, 9-13 Sept., 2013. 20. Faculty Development Programme on Photonics, sponsored by TEQIP-II, at SBS State Technical Campus, Ferozepur, 21-25 Oct., 2013. 21. Faculty Development Programme on Analytical Techniques for Detection of Environmental Pollutants, sponsored by TEQIP-II, at SBS State Technical Campus, Ferozepur, 16-27 Dec., 2013.	
17.	**Faculty Development Programmes organized in the Institute**	**(List is attached as Annexure-B)**	
18.	**Membership of professional bodies:** Life Member – Indian Society for Solid State Ionics		

19.	**Main Extra-Curricular Activities organized :** NIL
20.	**Main Curricular and Co-Curricular Activities Organised: NIL**

Annexure-A

LIST OF PUBLICATIONS

(A) International Referred Journals

1. S. Chandra and **Ajay Kumar**;
   Electrogravimetric analysis - A new tool applied to solid hydrates and proton conductors; Mat. Res. Bull. (USA) **24** 417 (1989).
2. S. Chandra and **Ajay Kumar**;
   Proton conduction in some solid hydrates and KDP-ferroelectric family materials;
   Solid State Ionics (Netherlands) **40/41** 863 (1990).
3. S. Chandra and **Ajay Kumar**;
   Electrogravimetric analysis-A potential technique for studying proton conducting hydrates; Solid State Ionics (Netherlands) **40/41** 255 (1990).
4. S.A. Hashmi, **Ajay Kumar**, K.K. Maurya and S. Chandra;
   Proton conducting polymer electrolytes I: PEO+NH4ClO4; J. Phys. D (UK) **23** 1307 (1990).
5. S. Chandra and **Ajay Kumar**;
   Investigation on proton transport mechanism in potassium dihydrogen phosphate;
   J. Phys.: Condensed Matter (UK) **3** 5271 (1991).
6. K.S. Sidhu, S. Singh, S.S. Sekhon, S. Chandra and **Ajay Kumar**;
   Silver ion conducting glasses with mixed glass formers; Phys. Chem. Glasses (UK) **32** 255 (1991).
7. **Ajay Kumar**, S.A. Hashmi and S. Chandra;
   Proton transport in KDP-family of ferroelectric materials; Bull. Mat. Sci. (India) **15** 191 (1992).
8. R.C. Agrawal, R.K. Gupta, R. Kumar and **Ajay Kumar**;
   Ionic transport in (AgI:AgCl) mixed system; J. Mat. Sci. (UK) **29** 3673 (1994).
9. **Ajay Kumar**, K.M. Shaju and S. Chandra;
   Ion transport in silver-lead-borate glass and evidence of ion association; Canadian Journal of Phys. **73** 369 (1995).
10. A.P. Singh, Navdeep Kaur, K. Singh and **Ajay Kumar**;
    Preparation of fully cubic stabilized zirconia with 10 mol% of CaO dopant concentration by microwave processing; J. Amer. Cerm. Society (USA) **90** (3) 789 2007.
11. K. L. Singh, **Ajay Kumar,** A. P. Singh and S. S. Sekhon;
    Microwave processing: A potential technique for preparing NiO-YSZ composite and Ni-YSZ cermet; Bulletin of Materials Science (India) **31** (4) 1 2008.
12. Pankaj Kalra, Anirudh P. Singh and **Ajay Kumar**
    Structural properties of NiO-CGO composites precursor prepared via combustion
    synthesis route; Asian J. Chemistry **21** (10) 157 2009.
13. Pankaj Kalra, Rajeev Garg, Neel Kanth Grover and **Ajay Kumar**;
    Structural properties of anode composites precursor of a solid oxide fuel cell prepared via combusten synthesis route; Asian J. Engg. & Applied Tech.; **1** (2) 36 2012.
14. Pankaj Kalra,Rajeev Garg and **Ajay Kumar**;
    Solid oxide fuel cell- an efficient future source of power and heat generation, Published in edited book of Materials Research Forum entitled "Engineering Applications of Nanoscience and Nanomaterials" editors Ajay Bansal and R. J. Tayade, Trans Tech Publications, Switzerland, 2013.

15. Pankaj Kalra, Rajeev Garg, **Ajay Kumar** and A.P. Singh;
Electrical characterization of NiO-CGO composites-SOFC anode precursor- prepared via combustion synthesis route; International J. Innovative Research in Science, Engineering and Technology; **3** (5) 12071 2014.

16. Kalra P., Garg R. K., **Kumar A**., Modelling of a High Temperature Solid Oxide Fuel Cell, Journal of Energy Technologies and Policy, ISSN 2224-3232 (Paper) ISSN 2225-0573 (Online), **5** (2) 76 2015.
17. Kanchan L. Singh, Payal Sharma, Anirudh P. Singh, **Ajay Kumar** and S. S. Sekhon;
Structural and electrical analysis of microwave processed YSZ electrolytes for SOFC prepared by co-precipitation method; J. the Minerals, Metals & Materials Society (JOM) (US), DOI: 10.1007/s11837-016-2145-1, Oct. 2016. (SCI indexed, IF: 1.798)

(B) National Referred Journals

(C) International Conferences

1. **Ajay Kumar,** and S. Chandra;
Electret type behaviour in solid electrolyte mixtures;
In Solid State Ionics Devices (**Proceedings of International Seminar** on Solid State Ionic Devices, National Univ. of Singapore, 18-23 July, 1988) eds. BVR Chowdary and S Radhakrishna (World Scientific, Singapore, 1988) p.503.
2. **Ajay Kumar**, KM Shaju and S. Chandra;
Ionic transport and battery characteristic studies on AgI-Ag2O-PbO-B2O3;
Solid Ionic Devices: Materials and Applications (**Proceedings of 3rd Asian Conference** on Solid State Ionics-cum-Training Workshop, BHU, Varanasi, India, 2-13 Nov, 1992) eds. BVR Chowdary, S Chandra, Sri Singh and PC Srivastava (World Scientific, Singapore, 1992) p.487.
3. RC Agarwal, Kuldeep Kathal, Rakesh Chandola, RK Gupta and **Ajay Kumar**;
Ag^+ ion mobility in AgI and AgCl by transient ionic current (TIC) technique;
Solid Ionic Devices: Materials and Applications (**Proceedings of 3rd Asian Conference** on Solid State Ionics-cum-Training Workshop, BHU, Varanasi, India 2-13 Nov, 1992) eds. BVR Chowdary, S Chandra, Sri Singh and PC Srivastava (World Scientific, Singapore, 1992) p.263.
4. Kanchan L Singh, **Ajay Kumar**, SS Sekhon, , AP Singh and N Kaur;
Molecular interaction of microwave energy to prepare YSZ an electrolyte for solid oxide fuel cells, in **Proceedings of International Conference** on Molecules to Materials, held at SLIET, Longowal (India), March 3-4, 2006, p.19.
5. Kanchan Lata Singh, **Ajay Kumar**, Anirudh P. Singh and S. S. Sekhon;
Evidence of uniform microstructure in microwave sintered yttria stabilizes zirconia (YSZ) by impedance analysis in **Proceedings of 32nd International Conference** of American Ceramics Society on Advanced Ceramics and Composites, Jan 28-Feb 01, 2008, Daytona Beach, Florida, US editors Tatsuki Ohji and Mrityunjay Singh, Wiley Pub.
6. **Ajay Kumar,** K. L. Singh, A. P. Singh and S. S. Sekhon;
Comparison of Electrical Properties of Microwave and Conventionally Processed NiO-YSZ;
International Conference on Materials for Advance Technologies 2009, Organized by Materials Research Society, Singapore, 28th June - 3rd July, 2009, Singapore.
7. Kanchan L. Singh, Anirudh P. Singh, **Ajay Kumar** and S.S. Sekhon;
Comparison of properties of YSZ prepared by microwave and conventional processing; in Advanced Processing and Manufacturing Technologies for Nanostructured and Multifunctional Materials: A Collection of Papers presented at the **38th International Conference** on Advanced Ceramics and Composites Jan. 27-31, 2014 Daytona Beach, Florida (eds. T. Ohji, M. Singh and S. Mathur), page 61, John Wiley & Sons Inc., Hoboken, NJ, USA.
8. **Ajay Kumar**, Navdeep Kaur and A. P. Singh;
A comparative study of microwave and conventionally processed magnesium stabilized zirconia ceramics;

In **Proceedings of International Conference** on Frontiers in Materials Research and Applications, Oct 30-31, 2014, Shaheed Bhagat Singh state Technical Campus, Ferozepur (India); p 16.

9. Pankaj Kalra, Rajeev Garg and **Ajay Kumar**;
   Advanced materials for a solid oxide fuel cell;
   In **Proceedings of International Conference** on Frontiers in Materials Research and Applications, Oct 30-31, 2014, Shaheed Bhagat Singh state Technical Campus, Ferozepur (India); p 125.
10. Pankaj Kalra, Rajeev Garg, Neel Kanth Grover and **Ajay Kumar**;
    Modeling of a solid oxide fuel cell with internal reforming;
    In **Proceedings of International Conference** on Frontiers in Materials Research and Applications, Oct 30-31, 2014, Shaheed Bhagat Singh state Technical Campus, Ferozepur (India); p 248.

(D) National Conferences

1. Kanchan L Singh, Navdeep Kaur, AP Singh and **Ajay Kumar**;
   Solid oxide fuel cells, an environment friendly energy source for tomorrow, in
   Proceedings of National Seminar on Science and Technology in Present Perspectives sponsored by ISTE held at SBS College of Engg & Tech, Ferozepur (India), Oct 26, 2002, p.49.
2. Navdeep Kaur, Anirudh P. Singh and **Ajay Kumar**;
   Microwave heating – a potential processing technology, in **Proceedings of National Conference** on Advances in Instrumentation, July 17-19, 2009 at Adesh Institute of Engineering & Technology, Faridkot (India).
3. Gaurav and **Ajay Kumar**;
   Effect of partial replacement of cement with dry waste water sludge in concrete;
   In the **proceedings of Inter-disciplinary National Conference** on Frontiers in Material Research & Applications, Oct 27-28, 2016, Shaheed Bhagat Singh state Technical Campus, Ferozepur (India); p 20.
4. Puneet Sharma and **Ajay Kumar**;
   Effect of solid waste on ground water quality in Chandigarh City;
   In the **proceedings of Inter-disciplinary National Conference** on Frontiers in Material Research & Applications, Oct 27-28, 2016, Shaheed Bhagat Singh state Technical Campus, Ferozepur (India); p 49.
5. Pankaj Kalra, Rajeev Garg and **Ajay Kumar**;
   Advanced synthesis techniques for various components of solid oxide fuel cells: a review;
   In the **proceedings of Inter-disciplinary National Conference** on Frontiers in Material Research & Applications, Oct 27-28, 2016, Shaheed Bhagat Singh state Technical Campus, Ferozepur (India); p 67.

(E) Invited Talk

Annexure-B

Faculty Development Programme organized in the Institute

Sr No	Name of FDP	Dept	From	To
1.	Engineering Materials, sponsored by TEQIP (Phase-II) – Short term course	Deptt. of Applied Sciences & Humanities), at SBS State Technical Campus, Ferozepur	17th Dec, 2012	21st Dec, 2012
2.	Analytical Techniques for Detection of environmental Pollutants, sponsored by TEQIP-II	Deptt. of Applied Sciences & Humanities), at SBS State Technical Campus, Ferozepur	16th Dec., 2013	27th Dec., 2013

Annexure-C

Main Extra-Curricular Activities organized

Annexure-D

Main Curricular and Co-Curricular Activities Organized