

## REFERENCES

---

Abram E.J., Sinclair D.C., and West A.R., (2003) “A Strategy for Analysis and Modelling of Impedance Spectroscopy Data of Electroceramics: Doped Lanthanum Gallate,” *Journal of Electroceramics*, **10**, 165–177.

Acosta M., Novak N., Rojas V., Patel S., Vaish R., Koruza J., Rossetti Jr. G. A., and Rodel J., (2017) “BaTiO<sub>3</sub>-based piezoelectrics: Fundamentals, current status, and perspectives”, *Applied Physics Reviews*, **4**, 041305-1- 53.

Ahmed A., Goldthorpe I.A., Khandani A.K., (2015) “Electrically tunable materials for microwave applications”, *Applied Physics Reviews*, **2**, 011302-17

aixACCT Systems (2018) , <https://www.aixacct.com/pdfs/ThinFilm-TF2000E.pdf> accessed on 21 August , 2018.

Apostolova I. N., Apostolov A.T., Bahoosh S.G., Wesselinowa J.M., (2013) “Origin of ferromagnetism in transition metal doped BaTiO<sub>3</sub>”, *Journal of Applied Physics*, **113**, 203904-1- 4.

Baker-Jarvis J, (1990) Transmission/Reflection and short-circuit line permittivity measurements ,US National institute of Standards and Technology, NIST Technical Note 1341, BIST Publications , Colorado ,pp 1-154.  
<https://nvlpubs.nist.gov/nistpubs/Legacy/TN/nbstechnicalnote1341.pdf> accessed on 26 12 2018.

Baker-Jarvis J, . Janezic M.D.,Grossvenor Jr J.H., Geyer R.G., (1993) Transmission/Reflection and short-circuit line methods for measuring permittivity and permeability, US National institute of Standards and Technology, NIST Technical Note 1355 R, BIST Publications , Colorado ,pp 1-124. (May 1992) [nvlpubs.nist.gov/nistpubs/Legacy/TN/nbstechnicalnote1355.pdf](https://nvlpubs.nist.gov/nistpubs/Legacy/TN/nbstechnicalnote1355.pdf) accessed on 20 November, 2018.

Bao J. Z., Davis C. C. and Schmuckler R. E., (1992) “Frequency Domain impedance measurements of erythrocytes : Constant Phase Angle impedance characteristics and phase transition,” *Biophysics Journal*, **61**, 1427-1434.

Barb D. , Barbulescu E., Barbulescu A., (1982) “Diffuse Phase Transitions and Ferroelectric-Paraelectric Diagram for the BaTiO<sub>3</sub>-SrTiO<sub>3</sub> System”, *Physica Status Solidi (a)*, **74**, 79 - 83.

Baskaran N., and Chang H.,(2001) “Effect of Sn doping on the phase transformation properties of ferroelectric BaTiO<sub>3</sub>”, *Journal of Materials Science :Materials in Electronics*, **12**, 527-531.

Benguigui L., (1978) “Disordered Ferroelectrics:Ba<sub>x</sub>Sr<sub>1-x</sub>TiO<sub>3</sub> Single Crystals,”

*Physica Status Solidi (a)* ,**46** , 337-342.

Bondarenko A.S., and Ragoisha G.A., (2005) In Progress in Chemometrics Research, Pomerantsev A.L.( Ed) , Nova Science Publishers , New York, pp 89–102.

Boukamp B.A., Pham M.T.N., Blank D. H .A.,and Bouwmeester H. J. M., (2004) “Ionic and Electronic Conductivity in Lead-Zirconate-Titanate (PZT)”, *Solid State Ionics*, **170**, 239-254 .

Buchanan R.C., (2004) Ceramic Materials for Electronics, CRC Press.

Bunting E.N., Shelton G.R., Reamer A.S., (1947) “Properties of Barium-Strontium Titanate Dielectrics”, *Part of the Journal of Research of the National Bureau of Standards, Research Paper RP 1776* ,**38** , 337-349.

Casciola M., and Fabiani D., (1983) “Ionic conduction and dielectric properties of anhydrous alkali metal salt forms of  $\alpha$ -zirconium phosphate,” *Solid State Ionics*, **11**, 31-38.

Chaitanya P., (2009) “Impedance Spectroscopy and RF Pulse Response of Piezoelectric Materials”, Ph.D. Thesis, Rani Durgavati University, Jabalpur, India.

Chaitanya P., Mishra, R., Ahirwal,P.K., Shukla,A, Thakur, O.P., Pandey, L, Parkash, O. and Kumar, D., (2015) “Study of Temperature Dependence of Electrode–Glass Ceramic Interface Using Impedance Spectroscopy”, *Integrated Ferroelectrics*, **159**,121-126 .

Chaitanya, P., Shukla, A. and Pandey, L, (2014) “Determination of Equivalent Circuit Model Compensation of Piezoelectric Materials by Using Impedance Spectroscopy,” *Integrated Ferroelectrics*, **150**, 88-95.

Chaitanya, P., Thakur, O.P., Kumar, V., Shukla A. and Pandey, L., (2011) “Equivalent circuit model of a  $\text{PbZr}_{0.6}\text{Ti}_{0.4}\text{O}_3$  ceramic using impedance spectroscopy,” *Journal of Ceramic Processing Research*, **12** ,247-258.

Chen L.F., Ong C.K., Neo C.P., and Varadan V.V., (2004) Microwave Electronics: Measurement and Materials Charactrization, John Wiley and Sons , Chichester.

Cole K.S. and Cole R.H., (1941) “Dispersion and Absorption in Dielectrics I. Alternating Current Characteristics,” *Journal of Chemical Physics*, **9**, 341-351.

Courtney W.E. , (1970) “Analysis and Evaluation of a method of Measuring Complex Permittivity and Permeabilty of Microwave insulators,” *IEEE Transactions on Microwave Theory and Techniques*, **18** , 476-485.

Cullity B.D., (1956) Elements of X-Ray Diffraction, Addisson- Wesley Publishing Co, Massachusetts.

Curecheriu L.P., Mitoseriu L., and Ianculescu A.,(2009) “Nonlinear dielectric

- properties of  $\text{Ba}_{1-x}\text{Sr}_x\text{TiO}_3$  ceramics,” *Journal of Alloys and Compounds* , **482**,1– 4 .
- Dang N.V., Dung N.T. , Phong P.T., and Lee I. , (2015) “Effect of  $\text{Fe}^{3+}$  substitution on structural, optical and magnetic properties of barium titanate ceramics,” *Physica B* , **457**, 103–107.
- Deka B., Ravi S., Perumal A., and Pamu D., (2014) “Ferromagnetism and ferroelectricity in Fe doped  $\text{BaTiO}_3$ ,” *Physica B*, **448** , 204-206.
- Dekker A. J., (1958) *Solid State Physics*, Prentice - Hall , NJ
- Dielectric Terminology Glossary (2016)  
[http://www.token.com.tw/pdf/dielectric/dielectric\\_terminology\\_glossary.pdf](http://www.token.com.tw/pdf/dielectric/dielectric_terminology_glossary.pdf) accessed on 15 October 2016.
- Dissado L.A., and Hill R.M., (1988) “Constant-Phase-Angle And Power-Law Regimes in the Frequency Response of a General Determinate Fractal Circuit,” *Physical Review B*, **37**, 3434-3439.
- Dragan Damjanovic D.,(2005) Hysteresis in Piezoelectric and Ferroelectric Materials, in: I. Mayergoyz and G.Bertotti (Eds.),*The Science of Hysteresis*, Volume 3, Elsevier.
- Dulian P., Bąk W., Wiczoek-Ciurowa K., and Kajtoch C., (2014) “Dielectric Behaviour of  $\text{BaTiO}_3$ - $\text{SrTiO}_3$  Solid Solutions Fabricated by High-energy Ball Milling,” *Key Engineering Materials* , **605** ,63-66.
- Durst G., Grotenhuis M., Barkow A.G.,(1950) “Solid Solubility Study of Barium, Strontium, and Calcium Titanates,” *Journal of the American Ceramic Society*, **33** ,133-139.
- Dutta D.P., Roy M., Maiti N. , and Tyagi A.K., (2016) “Phase evolution in sonochemically synthesized  $\text{e}^{3+}$  doped  $\text{BaTiO}_3$  nanocrystallites: structural, magnetic and ferroelectric characterisation ,” *Physical Chemistry Chemical Physics*, **18** , 9758-9769.
- Elbasset A., Abdi F., Lamcharfi T., Sayouri S.,and Aillerie M., (2013) “ Synthesis and characterization of Strontium doped Barium Titanate Doped Ceramics,” *International Reviews of Physics (IREPHY)* **7**, 287-293.
- Fiebig M., (2005) “Revival of the magnetoelectric effect,” *Journal of Physics D: Applied Physics* ,**38**, R123– R152.
- Fiebig M., Lottermoser T., Meier D. and Trassin M.,(2016)“The evolution of multiferroics,” *Nature Reviews Materials* ,**1**, 1 -14.
- Fricke H., (1932) “The Theory of Electrolytic Polarization,” *Philosophical Magazine*, **14**, 310-318.
- Fullprof (2016) <https://www.ill.eu/sites/fullprof/> accessed on 10.10.2016.

Garcia J. L., and Areny R. P., (2006) "Constant-phase element identification in conductivity sensors using a single square wave," *Sensors and Actuators A* **132**, 122-128 .

Gevorgian S, (2009) *Ferroelectrics in Microwave Devices, Circuits and Systems*, Springer-Verlag, London .

Hakki B.W., and Coleman P.D.,(1960) "A Dielectric Resonator Method of Measuring Inductive Capacities in the Millimeter Range," *IRE Transactions of Microwave Theory and Techniques* , **8** , 402-410.

Hayt W.H., Buck J.A. 8<sup>th</sup> Ed. (2012) *Engineering Electromagnetics*, McGraw-Hill, NY.

Herczog A., (1973) "Application of Glass-Ceramics for Electronic Components and Circuits," *IEEE Transactions on Parts, Hybrids and Packaging*, **PHP-9** , 247-256.

Hilton A.D., Ricketts B.W., (1996) "Dielectric properties of Ba<sub>1-x</sub>Sr<sub>x</sub>TiO<sub>3</sub> Ceramics," *Journal of Physics D: Applied Physics* **29** ,1321-1325.

Hirschorn B., Orazem M.E., Tribollet B., Vivier V., Frateur I., and Musiani M., (2010) "Constant -Phase- Element Behaviour Caused by Resistivity Distributions in Films I.Theory," *Journal of the Electrochemical Society*, **157**, C452-C457.

Huang Y., and Boyd K., (2008) *Antennas from Theory to Practice* , John Wiley & Sons Ltd, UK , p 3

Huitema L. ,and Monediere T.,(2012) "Dielectric Materials for Compact Dielectric Resonator Antenna Applications" in : Dr. M. A. Silaghi (Ed.), *Dielectric Material* , IntechOpen, DOI: 10.5772/50612. Available from: <https://www.intechopen.com/books/dielectric-material/dielectric-materials-for-compact-dielectric-resonator-antenna-applications>. Accessed on 14 Dec 2018.

Ioachim A., Banciu M.G., Nedelcu L., (2005) "Microwave Dielectric Properties of Doped Ba<sub>0.5</sub>Sr<sub>0.5</sub>TiO<sub>3</sub> Ceramics Correlated with Sintering Temperature," *Journal of Optoelectronics and Advanced Material*, **7**, 3023-3027.

Ioachim A., Alexandru H.V., Berbecaru C., Antohe S., Stanculescu F., Banciu M. G., Toacsan M. I., Nedelcu L., Ghetu D., Dutu A., and Stoic G.,(2006) "Dopant influence on BST ferroelectric solid solutions family," *Materials Science and Engineering C* , **26** ,1156 – 1161.

Ioachim A., Toacsan M.I., Banciu M.G., Nedelcu L., Dutu A., Antohe S., Berbecaru C., Georgescu L., Stoica G. and Alexandru H.V., (2007) "Transitions of Barium Strontium Titanate Ferroelectric Ceramics for Different Strontium Content," *Thin Solid Films*, **515**, 6289-6293.

Irvine J. T. S. , Sinclair D.C.,and West A.R (1990) "Electroceramics: Characterization by Impedance Spectroscopy," *Advanced Materials* , **2** , 132-138.

- Jackson W., Reddish W., (1945) "High permittivity crystalline aggregates," *Nature* , **156** , 717.
- Jaffe B , Cook W.R., Jaffe H., (1971) *Piezoelectric Ceramics* , Academic Press, London.
- Jona F., and Shirane G., (1962) *Ferroelectric Crystals* , Pergamon Press, New York.
- Jonscher, A.K.,(1983) *Dielectric Relaxation in Solids*, Chelsea Dielectric Press, London.
- Juarez R.L. , Federico Gonzalez F., and Castrejon M.E.V., (2011). "Lead-Free Ferroelectric Ceramics with Perovskite Structure, *Ferroelectrics - Material Aspects*," in: M. Lallart (Ed.), ISBN: 978-953-307-332-3, InTech, Available from: <http://www.intechopen.com/books/ferroelectrics-materialaspects/lead-free-ferroelectric-ceramics-with-perovskite-structure> accessed on 12 Dec 2017.
- Kanoun O., (2011) *Lecture Notes on Impedance Spectroscopy: Measurement Modelling and Applications* , CRC Press, Taylor and Francis group, London .
- Katare R. K. , Pandey L., Thakur O.P., Parkash O., and Kumar D., (2003) "Equivalent Circuit Model of  $\text{Ca}_{1-x}\text{Y}_x\text{Ti}_{1-x}\text{Co}_x\text{O}_3$  Using Impedance Spectroscopy," *Modern Physics Letters B*, **17**, 339-346 .
- Katare R.K., Pandey, L., Dwivedi, R. K. , Parkash O., and Kumar D., (1999) "A novel approach based on impedance spectroscopy for measurement of magnetic permeability of ceramics," *Indian Journal of Engineering and Materials Science*, **6**, 34-42.
- Katare, R. K. , (1997) *Application of Impedance Spectroscopy in the study of Electronic Ceramics*, Ph.D. Thesis, Rani Durgavati University, Jabalpur, India
- Keith G. M., Rampling M. J., Sarma K., Alford N. M., and Sinclair D.C., (2004) "Synthesis and characterization of doped 6H-BaTiO<sub>3</sub> ceramics," *Journal of the European Ceramic Society* **24**,1721–1724 .
- Keyrouz S. , Caratelli D., and Favreau D. , (2017) *Dielectric Resonator Antennas for 5G Applications* , <http://www.mpdigest.com/2017/04/24/dielectric-resonator-antennas-for-5g-applications/> , accessed on 15 Aug, 2018.
- Keyrouz S., and Caratelli D., (2016) "Dielectric Resonator Antennas: Basic Concepts, Design Guidelines, and Recent Developments at Millimeter-Wave Frequencies," *International Journal of Antennas and Propagation* , **2016**, 1- 20. <http://dx.doi.org/10.1155/2016/6075680>
- Keysight (2016), *Keysight Basics of Measuring the Dielectric Properties of Materials*. <http://literature.cdn.keysight.com/litweb/pdf/5989-2589EN.pdf> accessed on 20 November, 2016.

Khirade P.P., Birajdar S.D., Raut A.V., and Jadhav K.M., (2016) ,“Multiferroic iron doped BaTiO<sub>3</sub> nanoceramics synthesized by sol-gel auto combustion: Influence of iron on physical properties,” *Ceramics International* **42**, 12441-12451.

Kim S.W., Choi H.I., Lee M.H., Park J.S., Kim D. J, Do D., Kim M.H., Song T.K., Kim W.J.. (2013) “Electrical properties and phase of BaTiO<sub>3</sub>–SrTiO<sub>3</sub> solid solution,” *Ceramics International*, **39**, S487-S490.

Kingery W.D., Bowen H. K., and Uhlmann D.R., (1976) Introduction to Ceramics, Second Edition, John Wiley & Sons, p 368

Kittel C., (2005) Introduction to Solid State Phsics, Eighth Edition, John Wiley and Sons , NJ

Kochowski S., and Nitsch K., (2002) “Description of the frequency behaviour of metal–SiO<sub>2</sub>–GaAs structure characteristics by electrical equivalent circuit with constant phase element,” *Thin Solid Films*, **415**, 133-137.

Kolodiaznyi T., Belik A.A., Wimbush S.C., and Haneda H.,(2008) “Electrical and magnetic properties of hexagonal BaTiO<sub>3</sub>– $\delta$ ,” *Physical Review*. **B 77**, 075103-1-6.

Kraus J. D., and Carver K. R., (1980) *Electromagnetics* , McGraw-Hill, Tokyo.

Kraus J. D. ,(1988) *Antennas*, McGraw-Hill Book Co, New York

Kumar V., Thakur O. P., Pandey L., Guimaraes A.P., Goel A., Parkash O., and Kumar D., (2005) “Modeling of Electrical Behavior of La<sub>0.7</sub>Ca<sub>0.3</sub>MnO<sub>3</sub> Ceramic using Impedance Spectroscopy,” *Modern Physics Letters B* , **19**, 697-706.

Lee J. P. Y., and Balmain K. G. , (1979) *Radio Science* **14** , 437

Lei C., Bokov A. A., and Ye Z.-G., (2007) “ Ferroelectric to relaxor crossover and dielectric phase diagram in the BaTiO<sub>3</sub>–BaSnO<sub>3</sub> system,” *Journal of Applied Physics* ,**101**, 084105-9

Lewis M.H., (1989) Glass and Glass Ceramics, Chapman and Hall, London.

Lijuan Z, Lihai W., Jiandang L., Bin C., Minglei Z., Bangjiao Y, (2013), “Dielectric properties and structural defects in BaTi<sub>1-x</sub>Sn<sub>x</sub>O<sub>3</sub> ceramics”, *Journal of Physics: Conference Series* ,**443** , 012014-4

Lin F., Jiang D., Ma X., and Shi,W, (2008a) “Influence of doping concentration on room-temperature ferromagnetism for Fe-doped BaTiO<sub>3</sub> ceramics,” *Journal of Magnetism and Magnetic Materials*, **320** , 691–694.

Lin F., Jiang D., Ma X., and Shi,W. (2008b) “Effect of annealing atmosphere on magnetism for Fe- doped BaTiO<sub>3</sub> ceramic,” *Physica B*, **403** , 2525–2529.

Lines M.E. and Glass A.M., (1977) Principles and Applications of Ferroelectrics and

Related Materials, Clarendon Press, Oxford,.

Liou Y., Wu C.,(2008) “Synthesis and diffused phase transition of  $\text{Ba}_{0.7}\text{Sr}_{0.3}\text{TiO}_3$  ceramics by a reaction-sintering process,” *Ceramics International*, **34**, 517-522.

Liou J.W., Chiou B.S.,(1997) “DC Field Dependence of the Dielectric Characteristics of Doped  $\text{Ba}_{0.65}\text{Sr}_{0.35}\text{TiO}_3$  with Various Grain Sizes in the Paraelectric State,” *Journal of Applied Physics*, **36**, 4359–4368

Long S. A. , McAllister M. A., and Shen L. C., (1983)“The Resonant Cylindrical Dielectric Cavity Antenna,” *IEEE Transactions on Antennas and Propagation*, **AP-31** , 406-412

Lu S.G., Xu Z.K., Chen H., (2004) “Tunability and relaxor properties of ferroelectric barium stannate titanate ceramics”, *Applied Physics Letters*, **85** ,5319- 5321.

Luo Z., Zhang D., Liu Y., Zhou D., Yao Y., Liu C, Dkhil B., Ren X., and Lou X.,(2014) “Enhanced electrocaloric effect in lead-free  $\text{BaTi}_{1-x}\text{Sn}_x\text{O}_3$  ceramics near room temperature ,” *Applied Physics Letters*, **105**, 102904-1-5

Luukkonen O., Maslovski S.I., and Tretyakov S.A. , (2011) “A Stepwise Nicolson–Ross–Weir-Based Material Parameter Extraction Method,” *IEEE Antennas And Wireless Propagation Letters*, **10**, 1295-1298.

Macdonald J.R. (1987) *Impedance Spectroscopy*, Wiley Interscience Publications , New York , 1987.

Macdonald J.R. , and Johnson W.B. (2005) , “Fundamentals of Impedance Spectroscopy” .in: E. Barsoukov , and J.R. Macdonald , Ed. *Impedance Spectroscopy Theory, Experiment, and Applications*, Second Edition, John Wiley & Sons , NJ, pp 1-27.

Macdonald J.R. (2005) in: Barsoukov E. , and Macdonald J.R., (ed) *Impedance Spectroscopy Theory, Experiment, and Applications*, Second edition, New Jersey, John Wiley & Sons, Inc.

MacMillan P.W.,(1979) *Glass Ceramics*, 2<sup>nd</sup> Edition, Academic Press, London ,.

Maiti H.S., and mBasu R.N., (1986) “Complex plane impedance analysis for semiconducting barium titanate,” *Materilas Research Bulletin*, **21**, 1107-1114.

Markovic S., Jovaleki C., Veselinovic L., Mentus S., and Uskokovic D., (2010) “Electrical properties of barium titanate stannate functionally graded materials,” *Journal of the European Ceramic Society*, **30**, 1427–1435.

Markovic S., Mitric M., Cvjeticanin N., Uskokovic D., (2007) “Preparation and properties of  $\text{BaTi}_{1-x}\text{Sn}_x\text{O}_3$  multilayered ceramics” *Journal of the European Ceramic Society*, **27**, 505–509

Maso N., Beltran H., Cordoncillo E., Escribano P., and West A.R., (2006) “Electrical

- properties of Fe- doped BaTiO<sub>3</sub>,” *Journal of Materials Chemistry* **16** , 1626–1633.
- Mcquarrie M., “Structural Behavior in the System (Ba, Ca, Sr) TiO<sub>3</sub>, and Its Relation to Certain Dielectric Characteristics,” (1955) *Journal of the American Ceramic Society*, **38**, 444-449.
- Menoret C., Kiat J.M. , Dkhil B., Dunlop M., Dammak H., and Hernandez O., (2002) “Structural evolution and polar order in Sr<sub>1-x</sub>Ba<sub>x</sub>TiO<sub>3</sub> ,” *Physical Review B*, **65**, 224104-1-9.
- Mikulska I., (2014)“Structural and Magnetic Properties of Fe-doped BaTiO<sub>3</sub> Ceramics”, PhD Thesis, University of Nova Gorica, Vipavska **13**, 5000 Nova Gorica, Slovenia.
- Min K., and Tran V., (2006) “Application of Magneto-Dielectric Materials in Antenna Design,” *Journal of the Korea Electromagnetic Engineering society.*, **6** , 165-170.
- Mishra A., and Mishra N., (2012) “Iron-doped BaTiO<sub>3</sub>: Influence of iron on physical properties,” *International Journal of Materials Science and Applications*, **1**, 14-21.
- Mongia R.K., Ittipiboon A., (1997) “Theoretical and experimental Investigations on Rectangular Dielectric Resonator Antennas,” *IEEE Transactions on Antennas and Propagation* , **45**,1348-356.
- Morrison F.D., Sinclair D.C., and West A. R. , (2001a) “Characterization of Lanthanum-Doped Barium Titanate Ceramics Using Impedance Spectroscopy,” *Journal of the American Ceramic Society.*, **84**, 531–538
- Morrison F.D., Sinclair D.C., and West A. R. , (2001b) “An Alternative Explanation for the Origin of the Resistivity Anomaly in La-Doped BaTiO<sub>3</sub>, ‘ *J. Am. Ceram. Soc.*, **84**, 474–76.
- Mosallaei H., and Sarabandi K., (2004) “Magneto-Dielectrics in Electromagnetics: Concept and Applications,” *IEEE Transaction on Antennas and Propagation*, **52** , 1558- 1567.
- Moulson A. J. , and Herbert J. M. ,(2003) *Electroceramics* , John Wiley & Sons Ltd, Chichester.
- Mueller V., Beige H., and Abicht H. –P. (2004) “Non-Debye dielectric dispersion of barium titanate stannate in the relaxor and diffuse phase-transition state,” *Applied Physics Letters*, **84**, 1341-1343.
- Nguyen H. M., Dang N.Y., Chuang P. , Thanh T.D., Hu C., Chen T, Lam V.D., Lee C., and Hong L.V., (2011) “Tetragonal and hexagonal polymorphs of BaTi<sub>1-x</sub>Fe<sub>x</sub>O<sub>3-δ</sub> multiferroics using x-ray and Raman analyses,” *Applied Physics Letters*, **99**, 202501-1-3.



Nicolson A.M., and Ross G.F., (1970) "Measurement of the intrinsic properties of materials by time-domain technique," *IEEE Transactions on Instrumentation and Measurement*, **IM-19**, 377-382.

Novocontrol technologies (2016), [https://www.novocontrol.de/pdf\\_s/alpha.pdf](https://www.novocontrol.de/pdf_s/alpha.pdf) , accessed on 21 November, 2016.

Okaya A ,and Barash L. F., (1962), "The Dielectric Microwave Resonator", *Proceedings of IRE*, **50** , 2081-2092.

Orazem M. E., Frateur I., Tribollet B., Vivier V., Marcelin S., Pebere N., Bunge A.L., White E.A., Riemer D.P., and Musianif M., (2013) "Dielectric Properties of Materials showing Constant-Phase-Element (CPE) Impedance Response," *Journal of The Electrochemical Society*, **160** , C215-C225.

O'Reilly T. P. A., Ruytenberg T., and Webb A. G.,(2018) "Modular transmit/receive arrays using very-high permittivity dielectric resonator antennas," *Magnetic Resonance in Medicine* **79** , 1781-1788.

Pandey S., Kumar D., Parkash O. , and Pandey L., (2017) "Equivalent Circuit Models using CPE for Impedance Spectroscopy of Electronic Ceramics," *Integrated Ferroelectrics* , **183** ,141-162.

Pandey L., Katare R.K., Parkash O., Kumar D., and Thakur O.P., (1998) "Complex Impedance Analysis of Electronic Ceramics showing steeply rising impedance pattern at low frequency," *Indian Journal Pure & Applied Physics*, **36**,228-235.

Pandey L., Katare R.K., Parkash O., and Kumar D., (1997) "Evidence of Two Ferroelectric PTCR components in valence compensated ceramic system  $Ba_{1-x}La_xTi_{1-x}Co_xO_3$ ," *Bulletin of Materials Science*, **20**, 933-947.

Pandey L., (1992) in Workshop on use of computers in teaching physics, partly sponsored by ICTP, Jabalpur, India Dec 3-9.

Pandey, L., Parkash, O., Katare, R.K. and Kumar D. (1995) "Equivalent circuit models for electronic ceramics," *Bulletin of Materials Science*, **18**, 563-576.

Parkash O., Kumar D., Dwivedi R.K., Srivastava K.K., Singh P., and Singh S.,(2007) "Effect of simultaneous substitution of La and Mn on dielectric behavior of barium titanate ceramic," *Journal of Materials Science*, **42**, 5490-5496.

Parkash O., Prasad C.D., and Kumar D. (1990) "Dielectric relaxator behaviour of the system  $Sr_{1-x}La_xTi_{1-x}Co_xO_3$  ( $x \leq 0.40$ ) ," *Journal of Materials Science*, **25**, 487-492.

Partridge G., (1991) *Glass –Ceramics – Wide Ranging Engineering Materials, Glass Production,Technology International*, (Ed) R. H. Sterling Publications International Ltd., London.

Partridge G., (1994) ,"An overview of glass ceramics:Part1-development and principle bulk applications," *Glass Technology*, **35**, 116-127.

Petosa A., Ittipiboon A., Antar Y., (2003) Rectangular Dielectric Resonator Antennas, in : K. M. Luk, K. W. Leung(Eds.) , Dielectric Resonator Antennas , Research Studies Press Ltd. Baldock, Hertfordshire, (England).

Petosa A., and , Ittipiboon A., (2010), “Dielectric Resonator Antennas: A Historical Review and the Current State of the Art”, *IEEE Antennas and Propagation Magazine*, **52** , 91-116.

Popovici D., Okuyama M., Akedo J., (2011) Barium Titanate-Based Materials – a Window of Application Opportunities. In : M. Lallart (Ed.) *Ferroelectrics - Material Aspects.*, England : InTech 2011:279- 304, available at : [www.intechopen.com/books/ferroelectrics-material-aspects/bariumtitanate-based-materials-a-window-of-application-opportunities](http://www.intechopen.com/books/ferroelectrics-material-aspects/bariumtitanate-based-materials-a-window-of-application-opportunities) (accessed on 18 July 2018)

Puli V.S., Pradhan D.K., Adireddy S. et al. (2017) “Electric field induced weak ferroelectricity in Ba<sub>0.70</sub>Sr<sub>0.30</sub>TiO<sub>3</sub> ceramics capacitors,” *Ferroelectrics* , **516**, 133–139.

Qiu S., Li W. , Liu Y., Liu G. , Wu Y., and Chen. N, (2010) “Phase evolution and room temperature ferroelectric and magnetic properties of Fe-doped BaTiO<sub>3</sub> ceramics” , *Transactions of Nonferrous Metals Society of China* , **20** , 1911-1915.

Raistrick I.D., Franceschetti D.R., and Macdonald J.R. . (2005) ,Chapter 2, Theory, in: E. Barsoukov , and J. R. Macdonald (Eds) Impedance Spectroscopy Theory, Experiment, and Applications ,Second Ed, John Wiley & Sons , NJ

Rajan S., Gazzali P.M. M. , Chandrasekaran G., (2016) “Electrical and magnetic phase transition studies of Fe and Mn co-doped BaTiO<sub>3</sub> ,” *Journal of Alloys and Compounds*, **656** , 98-109.

Randall C.A., Newnham R.E., and Cross L.E., (2009) History of the First Ferroelectric Oxide, BaTiO<sub>3</sub> , [https://ceramics.org/wp-content/uploads/2009/.../first\\_ferroelectric\\_oxide\\_ba\\_tio3.pdf](https://ceramics.org/wp-content/uploads/2009/.../first_ferroelectric_oxide_ba_tio3.pdf) accessed on 10 Dec, 2018.

Rani A., Kolte J., Vadla S.S., Gopalan P., (2016) “Structural, electrical, magnetic and Magnetoelectric properties of Fe doped BaTiO<sub>3</sub> ceramics,” *Ceramics International*, **42** , 8010–8016.

Richtmyer R. D., (1939) “Dielectric Resonators”, *Journal of Applied Physics Phys* , **10** , 391-398.

Rocha H.H.B., Freire F.N.A., Santos M.R.P., Sasaki J.M., Cordaro T., Sombra A.S.B., (2008) “Radio-frequency (RF) studies of the magneto-dielectric composites: Cr<sub>0.75</sub>Fe<sub>1.25</sub>O<sub>3</sub> (CRFO) Fe<sub>0.5</sub>Cu<sub>0.75</sub>Ti<sub>0.75</sub>O<sub>3</sub> (FCTO),” *Physica B*, **403** , 2902–2909.

Rushman R.D., Strivens M.A., (1946) “The Permittivity of Polycrystals of the Perovskite Type,” *Transactions of the Faraday Society* , **42** , A231-A238.

Sadiku M.N.O. ,(2007) *Principles of Electromagnetics*, fourth ed., Oxford University Press, New Delhi (India).

Samuvel K., Ramachandran K., (2014-2015) “ Determination of A.C. Conductivity of Nano-Composite Perovskite  $BaTi_{1-x}Fe_xO_3$  Prepared by the Solid State Technique,” *International Journal of ChemTech Research*, **7**, 576-582.

Sanvordenker V.C. , (1967) “Optical and Microstructural Variations with Electric Field in Barium-Strontium Titanate Ceramics,” *Journal of The American Ceramic Society*, **50**, 261-265.

Sawyer C.B., and Tower C.H.,(1930) “Rochelle salt as a dielectric,” *Physical Review*, **35**, 269 -273.

Schelkunoff S. A., and Friis H. T. (1952),*Antennas Theory and Practice*, John Wiley & Sons , New York.

Sebastian M. T., Silva M.A.S., and Sombra A.S.B.,(2017), “Measurement of Microwave Dielectric Properties and Factors Affecting Them,” in: *Microwave Material and Applications*, Vol –I ,Eds M. T. Sebastian, R. Ubic, and H. Jantunen, John Wiley, NJ, pp 1-45.

Sebastian M.T., *Dielectric Materials for Wireless Communications*, (2008) Elsevier, London (UK).

Shannon R.D., Prewitt C.T., (1969), “Effective Ionic Radii in Oxides and Fluorides,” *Acta Crystallographica*, **B25**, 925-946.

Shvartsman V.V., Kleemann W., Dec J. , Xu Z.K., and Lu S.G., (2006) “Diffuse phase transition in  $BaTi_{1-x}Sn_xO_3$  ceramics: An intermediate state between ferroelectric and relaxor behavior,” *Journal Of Applied Physics*, **99**, 124111 -1-8.

Sinclair D.C., and West A.R. (1989) “Impedance and modulus spectroscopy of semiconducting  $BaTiO_3$  showing positive temperature coefficient of resistance,” *Journal of Applied Physics*, **66** , 3850-3856.

Sinclair D.C., and West, A.R., (1994) “Effect of Atmosphere on the PTCR properties of  $BaTiO_3$  ceramics,” *Journal of Materials Science*, **29**, 6061-6068 .

Singh N, Singh AP, Prasad D Neelam Singhy, Anirudh P Singh, Ch Durga Prasad and Dhanajai Pandey, (1996) “Diffuse ferroelectric transition and relaxational dipolar freezing in  $(Ba, Sr)TiO_3$ : III. Role of order parameter fluctuations,” *Journal of Physics.: Condensed Matter*, **8**, 7813– 7827.

Sitko D., Garbarz-Glos B., Livinsh M., Bąk W., Antonova M., and Kajtoch C.,(2015) “Electrical Characterization of the Fe-Doped BT Ceramics by an Impedance Spectroscopy,” *Ferroelectrics*, **486** , 8–12.

Sonia., (2011) Synthesis & Characterization of Modified Barium Titanate Ferroelectrics by Modified Solid State Reaction and Microwave Sintering Route. PhD Thesis. Rourkela, India:National Institute of Technology, Rourkela, 2011.

Stewart M., Cain M. G., and Weaver P. (2014), Electrical Measurement of Ferroelectric Properties , in : Markys G. Cain (ed) ,Characterisation of Ferroelectric Bulk Materials and Thin Films . Springer, London, p 7.

Su H., Tang X., Zhang H., Jing Y., Bai F., (2014) “Low-Loss Magneto-Dielectric Materials: Approaches and Developments,” *Journal of Electronic Materials*, **43** ,299-307.

Tagantsev A.K., Sherman V.O., Astafiev K.F., Venkatesh J., and Setter N., (2003) “Ferroelectric Materials for Microwave Tunable Applications,” *Journal of Electroceramics*, **11**, 5-66.

Teranishi T., Hoshina T. and Takeda H., Tsurumi T., (2009a) “Polarization Behaviour in diffuse phase transition of  $Ba_x Sr_{1-x}TiO_3$  ceramics,” *Journal Of Applied Physics*, **105** , 054111-5.

Teranishi T., Hoshina T., Tsurumi T., (2009b) “Wide range dielectric spectroscopy on perovskite dielectrics,” *Materials Science and Engineering B*, **161**, 55–60.

Thakur O.P., Kumar D., Parkash O. , Pandey L., (2004) “Dielectric and impedance Spectroscopic behavior of alkali oxide – containing glass ceramics in the system  $[SrO.TiO_2]-[SiO_2.B_2O_3]$ ,” *Journal of Ceramic Processing Research* , **5**, 106-113.

Tikhomirov O, Jiang H., and Levy J. ,(2000) “Direct observation of local ferroelectric phase transitions in  $Ba_x Sr_{1-x}TiO_3$  thin films “, *Applied Physics Letters* , **77** , 2048-2050.

Tiwari V.S., Singh N., Pandey D., (1995) “Diffuse ferroelectric transition and relaxational dipolar freezing in  $(Ba,Sr)TiO_3$ ,” *Journal of Physics: Condensed Matter*, **7** ,1441-1460.

Tripathi P., Sahu B., Singh S.P., Parkash O., Kumar D.,(2015) “Preparation and characterization of liquid phase ( $55B_2O_3-45Bi_2O_3$ ) sintered cobalt doped magnesium titanate for wideband stacked rectangular dielectric resonator antenna (RDRA),” *Ceramics International* , **41** , 2908–2916.

Tsurumi T., Soejima K., Kamiya T., and Daimon M., (1994) “Mechanism of Diffuse Phase Transition in Relaxor Ferroelectrics,” *Japanese Journal of Applied Physics*, **33** ,1959 – 1964.

Uchino K. and Nomura S., (1982) “Critical exponents of the dielectric constants in diffused-phase- transition crystals,” *Ferroelectrics Letters Section* , **44** , 55-61.

Upadhyay S., Kumar D., and Parkash O., (1996) “Effect of composition on dielectric and electrical properties of the  $Sr_{1-x}La_x Ti_{1-x} Co_x O_3$  system ,” *Bulletin of Materials*

*Science*, **19**, 513-525.

Upadhyay S. K. , Reddy V.R., Bag P., Rawat R., (2014), “ Electro-caloric effect in lead-free Sn doped BaTiO<sub>3</sub> ceramics at room temperature and low applied fields”, *Applied Physics Letters* ,**105**, 112907 - 5 .

Upadhyay S., Parkash O., Kumar D., (2001) “Solubility of lanthanum, nickel and chromium in barium stannate,” *Materials Letters*, **49**, 251-255.

Valant M., Arcon I., Mikulska I., Lisjak D., (2013) “Cation Order–Disorder Transition in Fe-Doped 6H-BaTiO<sub>3</sub> for Dilute Room-Temperature Ferromagnetism,” *Chemistry of Materials*, **25**, 3544–3550.

Venkata Ramana E, Yang S.M., Jung R., Jung M.H., Lee B.W., Jung C.U., (2013) “Ferroelectric and magnetic properties of Fe-doped BaTiO<sub>3</sub> thin films grown by the pulsed laser deposition,” *Journal of Applied Physics*, **113**,187219(1-5).

Von Hippel A.R., (1954) *Dielectric Materials and Applications* ,John Wiley and Sons , NY.

Vopson M. M., (2014) “Fundamentals of Multiferroic Materials and Their Possible Applications,” *Critical Reviews on Solid State and Materials Sciences*,**40**, 223-250.  
DOI: 10.1080/10408436.2014.992584

Waldhoff N., Fasquelle D., Blary K, (2014) “Microwave characterization of tunable interdigitated capacitances on BaTiSnO<sub>3</sub> thin films deposited by sol-gel,” *Applied Physics Letters* ,**105**, 132907-4.

Wang R., Inaguma Y.,and Itoh M., (2001) “Dielectric properties and phase transition mechanisms in Sr<sub>1-x</sub>Ba<sub>x</sub>TiO<sub>3</sub> solid solution at low doping concentration,” *Materials Research Bulletin* , **36** ,1693–1701.

Wee F.H., Malek F., Sreekantan S., Al-Amani A.U., Ghani F., and You K.Y. (2011) “Investigation Of The Characteristics Of Barium Strontium Titanate (BST) Dielectric Resonator Ceramic Loaded On Array Antennas,” *Progress In Electromagnetics Research* ,**121**, 181-213.

Wei X.K., Su Y.T., Sui Y., Zhang Q.H., Yao Y., Jin C.Q.,<sup>1</sup> and Yu R.C., (2011) “Structure, electrical and magnetic property investigations on dense Fe-doped hexagonal BaTiO<sub>3</sub>”,*Journal of Applied Physics*, **110**, 114112-1-6

Weir W.B., (1974) “Automatic Measurement of Complex Dielectric Constant and Permeability at Microwave Frequencies,” *Proceedings of the IEEE*, **62** , 33-36.

West A.R., (2014) *Solid State Chemistry and its Applications*, second Ed, John Wiley & Sons Ltd, Chichester, U K.

West A.R., Sinclair D.C., and Hirose N. (1997) “Characterization of Electrical Materials, Especially Ferroelectrics, by Impedance Spectroscopy,” *Journal of*

*Electroceramics* **1**, 65–71.

Whatmore R., (2017) “Ferroelectric Materials” In: S. Kasap, P. Capper (Eds.), *Springer Handbook of Electronic and Photonic Materials* Springer International Publishing AG

Xu B., Yin K.B., Lin J., Xia Y. D, Wan X.G., Yin J., Bai X.J., Du J., Liu Z.G., (2009) “Room- temperature ferromagnetism and ferroelectricity in Fe-doped BaTiO<sub>3</sub>,” *Physical Review B* , **79**, 134109-1-5.

Xue D., Zhang H., Li Y. , Liu Y., and Li Z., (2012) “Electrical properties of hexagonal BaTi<sub>1-x</sub>Fe<sub>x</sub>O<sub>3-δ</sub> (x= 0.1, 0.2, 0.3) ceramics with NTC effect,” *Journal of Materials Science: Materials in Electronics*, **23** , 1306–1312.

Yaduvanshi R.S., and Parthasarathy H.,(2016) *Rectangular Dielectric Resonator Antennas Theory and Design* , Springer, New Delhi, DOI 10.1007/978-81-322-2500-3

Yasuda N., Ohwa H., and Asano S.,(1996), “Dielectric Properties and Phase Transition of Ba(Ti<sub>1-x</sub>Sn<sub>x</sub>)O<sub>3</sub> solid Solution”, *Japanaes Journal of Applied Physics*, **35**, 5099-5130.

Zhang X., Wu L., Gao S., Liu J.Q., Xu B., Xia Y.D., Yin J., and Liu Z.G., (2015) “Large electrocaloric effect in Ba(Ti<sub>1-x</sub>Sn<sub>x</sub>)O<sub>3</sub> ceramics over a broad temperature region ,” *AIP Advances*, **5** , 047134-1-7

Zhou L., Vilarinho P.M., Baptista J.L., (1999) “Dependence of Structural and Dielectric Properties of Ba<sub>1-x</sub>Sr<sub>x</sub>TiO<sub>3</sub> Ceramic Solids Solutions on Raw Material Processing,” . *Journal of the European Ceramic Society* ,**19** , 2015-2020.

Zivkovic I. , (2012),“Dielectric Loading For Bandwidth Enhancement Of Ultra-Wide Band Wire Monopole Antenna,” *Progress In Electromagnetics Research C*, **30** , 241-252.