A Study on Consumer Buying Behaviour Towards English Newspaer in Coimbatore District
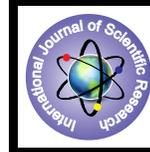
S.PARTHIPAN	II-MBA KARPAGAM COLLEGE OF ENGINEERING COIMBATORE, TAMIL NADU, INDIA
A.JOHN WILLIAM	ASSISTANT PROFESSOR DEPARTMENT OF MANAGEMENT STUDIES KARPAGAM COLLEGE OF ENGINEERING COIMBATORE, TAMIL NADU, INDIA

ABSTRACT   *Print media is playing a predominant role in the recent days at the outset byViewing in the newspaper perspective, people are interested in newspapers which correspond to their beliefs that they can identify themselves, this is a view commonly expressed in evaluations of the research on the impact of the newspaper among the readers further the research attempts to identify the consumer behaviour on English newspaper further the study portrays the factors influencing the buying behaviour towards English newspaper by analyzing with the demographic*

INTRODUCTION

The newspaper has been a part of our daily life for several centuries. They have been a way for the public to be informed of important events that are occurring around the world. Newspapers have undergone dramatic changes over the course of history. Some of the earliest newspapers date back to Ancient Rome where important announcements were carved in stone tablets and placed in highly populated areas where citizens could be informed of the announcements.

Over the centuries, newspapers have undergone many changes. The biggest change was printing them on newsprint and use of the printing press. By automating the production of the newspaper, the number of papers available to the public greatly increased, while making it affordable for people to purchase one. These developments led to a boom in the newspaper industry where several different newspapers started to appear in major cities, publishing morning, afternoon and evening editions. These papers gave readers news, weather, sports and other features that informed and entertained them.

However, over the course of time, newspaper costs continued to rise and the number of newspaper subscribers continued to fall. This led to a vast reduction in the number of newspapers and newspaper editions in every market. In addition, with the increase in the use of technology, the public no longer needed the newspaper for its source of information. Other media such as radio, television and the Internet started to replace the paper as an information source.

In recent years, newspapers and other media have adapted to the changing technology environment by starting to offer online editions to cater to the needs of the public. In the future, the trend towards more electronic delivery of the news will continue with more emphasis on the Internet, social media and other electronic delivery methods. However, while the method of delivery is changing, the newspaper and the industry still has a niche in the world.

COMPANY PROFILE
THE HINDU

The Hindu is an English-language Indian daily newspaper. Headquartered at Chennai, The Hindu was published weekly when it was launched in 1878, and started publishing daily in 1889. It is the second most circulated English-language newspaper in India, with average qualifying sales of 1.39 million copies (as of December 2013). According to the Indian Readership Survey in 2012, it was the third most widely read English newspaper in India, with a readership of 2.2 million people.

Business standard

Business Standard is an Indian English-language daily newspaper published by Business Standard Ltd (BSL) in two languages, English and Hindi. Founded in 1975, the newspaper primarily covers India and international business, and financial news and issues. The main English-language

regionalcentre,NewDelhi, Kolkata, Bangalore, Coimbatore, Chennai, Ahmedabad, Hyderabad, Chandigarh, Pune, Lucknow, Raipur, Bhubaneswar, and Kochi—and reaches readers in over 1,000 towns and cities across India.

The Times of India (**TOI**) is an Indian English-language daily newspaper. It is the third-largest newspaper in India by circulationand largest selling English-language daily in the world according to Audit Bureau of Circulations (India). According to the Indian Readership Survey (IRS) 2012, the Times of India is the most widely read English newspaper in India with a readership of 7.643 million. This ranks the Times of India as the top English daily in India by readership.

The New Indian Express is an Indian English-language broadsheet daily newspaper published by the Express Publications and based in Chennai. It was founded in 1932 as the Indian Express, under the ownership of Chennai-based P. Varadarajulu Naidu. In 1991, following the death of the owner Ramnath Goenka, the Goenka family split the group into two companies. Initially, the two groups shared the Indian Express title, and editorial and other resources. But on 13 August 1999, the northern editions, headquartered in Mumbai, retained and renamed Indian Express as The Indian Express, while the southern editions became ,The New Indian Express. Today, the newspapers and companies are separate entities. The newspaper is known for its intrepid and anti-establishment tone. Express Publications (Madurai) Limited publishes the The New Indian Express from 22 centres in Tamil Nadu, Karnataka, Andhra Pradesh, Kerala and Odisha

REVIEW OF LITERATURE

Das and Sengupta (2012) analyzed the case of Times of India, by application of diffusion of innovation theory and disruptive technology theory, the nature of challenges it faces and the survival strategies adopted by the newspaper. The innovative strategies identified by them, which will help the industry to achieve differentiation, are innovation in production, marketing, use of information technology and in content design and layout.

Singh and Arya (2012) concluded that source of information, habitual exercise and source of entertainment to be the reasons behind preferring to read the newspaper. The urban population felt that the only way to know the happenings in the locality was through the newspaper

Hooke (2012) cites the global economic crisis, decreased advertising revenues and changing patterns in media use as some of the major factors for the decline in the newspaper markets in the west. Contrasting the situation in the East, he says that the growing middle class, growing literacy levels and higher disposable income will boost newspaper sales and advertising revenues. He opines that the elite English newspapers will face the challenges like their western counterparts, but sees a bright future for the growing vernacular press that have embraced the tabloid tradition.

Hayden (2012) discusses about the ways Indian newspapers are developing ways of staying relevant in reader's lives while also appealing to the advertisers. He feels that there needs to be efforts to built loyalty among readers by emphasising their local identity and encouraging grassroots leadership. He also cautions that trouble for Indian newspapers, however, may lie on the horizon. Fashionable new websites are slowly emerging as alternatives to newspapers. In time, they might pose a legitimate threat to print's stronghold on India's morning-news consumption.

Ali (2012) analyses the preferences and behaviour of the readers of the newspapers on the basis of their attitudes, needs, wants and beliefs. He measured brand loyalty with the criterion of continued patronage. It was gathered that credibility and in-depth coverage of news were important. He concludes that newspaper brands should concentrate on developing their image by focusing on the changing needs of customers and address the needs of consumers to strengthen their loyalty and widen readership base.

RESEARCH METHODOLOGY

Research methodology is a way to systematically solve the research problem. It May be understood as a science of studying how research is done scientifically. This should give the steps that are generally adopted by a researcher in studying his research problem along with the logical behind them. By research methodology, the researcher may design his methodology, which may differ from problem to problem.

In the research methodology the logic behind the methods used is also to be considered, and to evaluate, the research study should explain why the particular method or technique is used and how to evaluate the research results.

STATEMENT OF THE PROBLEM
1. More advertisement and lack of information
2. Digital media influence newspaper
3. Lack in news coverage
4. Retention of existing customer

OBJECTIVES OF THE STUDY
Primary Objective:
➤ To analyze the customer buying behaviour towards English Newspaper in coimbatore district.
Secondary Objective:
➤ To determine the factors influencing the purchase of this English newspaper.
➤ To study the customer satisfaction towards Newspaper.
➤ To find out the expectation level of the customers on brand Newspaper.

SAMPLE DESIGN
In the consumer market research there is a problem of selecting a sample of few hundred respondents from a vast population. The reason for sampling is that it is not possible to cover the entire population in the field research.

Sampling Technique
Simple random sampling has been adopted for this study, so

that the researcher can select the most accessible population number. The sample size is calculated using the formula.

Instrument of data collection: questionnaire

Sample size: 384 because it is unknown population so the the sample size is determined by

$$Ss= \frac{Z^2XP(1-P)}{M^2}$$

SS=sample size

Z^2= confidence level 95% as(1.96)

P= population proportion

M2= margin of error 5%(0.05)

$$=\frac{1.96^2X.5(1-.5)}{0.05^2}$$

$$\frac{3.8416X0.25}{0.0025}$$

$$=\frac{0.9604}{0.0025}$$

$$=384.16$$

Sampling method: The research is an unknown population the non-probability judgement sampling was swlected

Sample Size
The researcher has made a sample size of 384 respondents.

Data Collection
These are two types of data available to the researcher. They are

a) **Primary data**
b) **Secondary data**

Primary Data
It refers to the first hand information collected by the researcher, specific to the research problem. It includes using different

primary data collection tool such as personal interview using questionnaires, telephone surveys, mail surveys etc. For the present study, primary data was collected by survey method using questionnaires.

Secondary Data
It is the information that already exists for another purpose. This refers to all those data which are collected for the earlier work. The secondary data for this work was obtained from company profile. Company magazine, website, newspaper, internet, text books and report from company broachers and other promotional materials.

Statistical Tools Used
The data has been analysed mainly by using the following methods namely, mean analysis, chi-square test.

ANALYSIS AND INTERPRETATION
TABLE SHOWING GENDER OF THE RESPONDENTS

GENDER	NO. OF.RESPONDENTS	FREQUENCY
Male	228	59.37%
Female	156	40.62%
TOTAL	384	100%
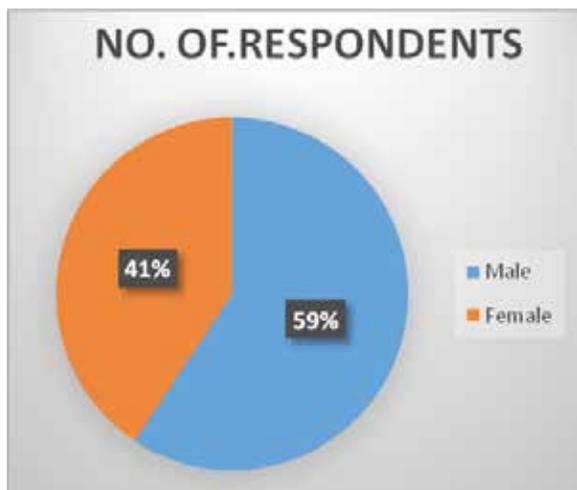
TABLE AND CHART SHOWING INCOME OF THE RESPONDENTS

INCOME	NO. OF. REPONDENTS	FREQUENCY
BELOW 10000	128	33.33%
10000-20000	123	32.03%
21000-25000	53	13.80%
ABOVE 25000	80	20.83%
TOTAL	**384**	**100%**
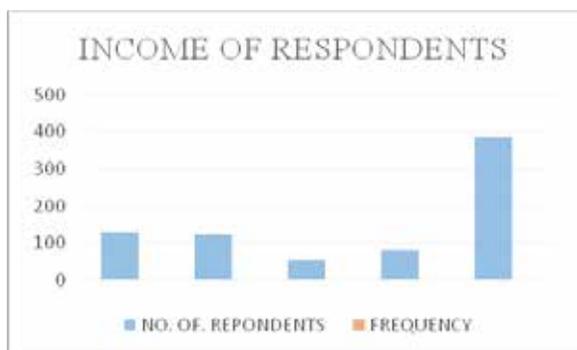
INFERENCE:
From the above table it shows that 128% of the respondents below 10000 and 53% of the respondents belong to 21000-25000 of the income group.

TABLE AND CHART SHOWING MARITAL STATUS OF THE RESPONDENTS

MARITAL STATUS	NO. OF. RESPONDENTS	FREQUENCY
SINGLE	250	65.10%
MARRIED	134	34.89%
TOTAL	384	100%

TABLE AND CHART SHOWING THE LANGUAGE KNOWN BY THE RESPONDENTS

LANGUAGE KNOWN	NO. OF. RESPONDENTS	FREQUENCY
TAMIL	210	54.68%
MALAYALAM	74	19.27%
HINDI	62	16.14%
OTHERS	38	9.90%
TOTAL	**384**	**100%**
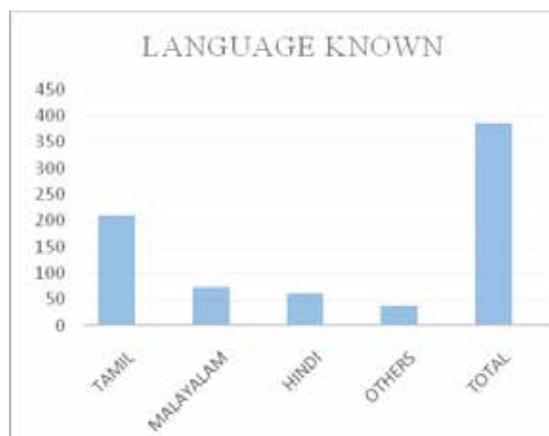
TABLE AND CHART SHOWING THE EDUCATION OF THE RESPONDENTS

EDUCATION	NO. OF. RESPONDENTS	FREQUENCY
Below 12th	158	41.14%
UG	134	34.89%
PG	60	15.62%
Doctorate	32	8.33%
TOTAL	**384**	**100%**

EDUCATION OF RESPONDENTS
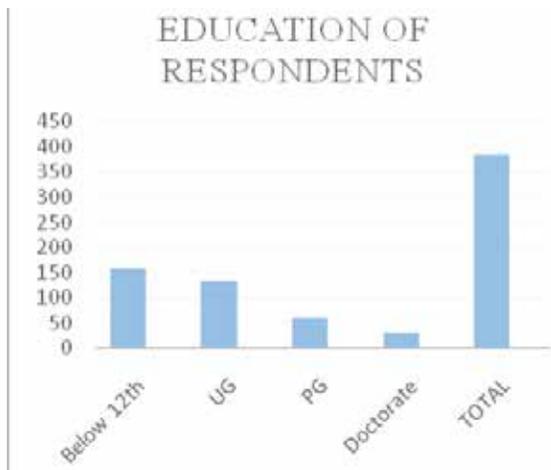
CHI SQUARE

INCOME VS EXPENDITURE ON NEWSPAPER BUYING

HO: There Is No Relationship Between Income and Expenditure on newspaper buying.

H1: There Is a   Relationship between Income and Expenditure on newspaper buying.

INCOME/ PRICE FOR NEWSPA-PER	BELOW Rs.75	Rs.75-125	Rs.125-175	ABOVE Rs.175	TOTAL
BELOW 10000	30	38	14	6	88
10000-20000	56	56	20	10	142
21000-25000	34	68	14	6	122
ABOVE 25000	8	12	0	12	32
TOTAL	128	174	48	34	384

CALCULATION:

OBSERVED	EXPECTED	(O-E)	(O-E)²	(O-E)²$_{/E}$
30	29.33	0.67	0.44	0.015
38	39.87	1.87	3.49	0.087
14	11	3	9	0.818
6	7.79	1.79	3.20	0.410
56	47.33	8.67	75.16	1.587
56	64.34	8.34	69.55	1.080
20	17.75	2.25	5.06	0.285
10	12.57	2.57	6.60	0.525
34	40.66	6.66	44.35	1.090
68	55.28	12.72	161.79	2.926
14	15.25	1.25	1.56	0.102
6	10.80	4.8	23.04	2.133
8	10.66	2.66	7.07	0.663
12	14.5	2.5	6.25	0.431
0	4	4	16	4
12	2.83	9.17	84.08	29.710
TOTAL				45.859

Chi square value

Chi square value	Table value	Significant / insignificant
16.919	45.859	significant

The value of chi square is 16.919 .The chi square has 9 degree of freedom. The table value (45.859) is greater than 0.05. Hence there is significant relationship between income and expenditure on newspaper buying.

RESPONDENTS ACCESS DAILIES VS REASON FOR READING NEWSPAPER

HO: There Is No Relationship Between respondents access dailies And reason for reading newspaper.

H1: There Is a   Relationship Between respondents access dailies And reason for reading newspaper.

Media to access dailies/ Reason for reading newspaper	Informative	Improving language skills	Reliable	Availability	TOTAL
Internet	36	32	18	8	94
Newspaper	22	70	58	8	158
Television	12	32	42	6	92
Newspaper application	14	10	10	6	40
TOTAL	84	144	128	28	384

CALCULATION:

0BSERVED	EXPECTED	(O-E)	(O-E)²	(O-E)²$_{/E}$
36	20.56	15.44	238.39	11.59
32	35.25	3.25	10.56	0.299
18	44.55	26.55	704.90	15.82
8	6.85	1.15	1.322	0.192
22	34.56	12.56	157.75	4.56
70	59.25	10.75	115.56	1.950
58	52.66	5.34	28.51	0.541
8	11.52	3.52	12.390	1.075
12	20.12	8.12	65.93	3.27
32	34.5	2.5	6.25	0.181
42	30.66	11.34	128.59	4.19
6	6.70	0.7	0.49	0.073
14	8.75	5.25	27.56	3.14
10	15	5	25	1.66
10	13.33	3.33	11.08	0.831
6	2.91	3.09	9.54	3.27
TOTAL				52.582

Chi square value

Chi square value	Table value	Significant / insignificant
16.919	52.582	significant

The value of chi square is 16.919 The chi square has 9 degree of freedom. The table value (52.582) is greater than 0.05. Hence there is significant relationship between respondents' access dailies and reason for reading newspaper.

BRAND NEWSPAPER VS COVERAGE OF NEWSPAPER

HO: There Is No Relationship Between Brand And coverage of newspaper.

H1: There Is A Relationship between Brand And coverage of newspaper.

BRAND NEWS-PAPER/ COVER-AGE OF NEWSPA-PER	Advertise-ment	Job opportu-nities	Business & Politics	Sports news	TO-TAL
Deccan chronicle	44	24	8	2	78
Hindu	74	80	12	4	170
Indian express	54	48	4	8	114
Business standard	6	12	2	2	22
TOTAL	**178**	**164**	**26**	**16**	**384**

CALCULATION:

OBSERVED	EXPECTED	(O-E)	(O-E)²	(O-E)²/E
44	36.15	7.85	61.62	1.70
24	33.31	9.31	86.67	2.60
8	5.28	2.72	7.39	1.39
2	3.25	1.25	1.56	0.48
74	78.80	4.8	23.04	0.29
80	72.60	7.4	54.76	0.75
12	11.51	0.49	0.2401	0.020
4	7.08	3.08	9.48	1.33
54	52.84	1.16	1.34	0.025
48	48.68	0.68	0.46	0.009
4	7.71	3.71	13.76	1.78
8	4.75	3.25	10.56	2.22
6	10.19	4.19	17.55	1.72
12	9.39	2.61	6.81	0.72
2	1.48	0.52	0.27	0.18
2	0.91	1.09	1.18	1.29
TOTAL				**15.214**

Chi square value

Chi square value	Table value	Significant / insignificant
16.919	15.214	In significant

The value of chi squared statistic is 16.919 The chi squared statistic has 9 degree of freedom. The table value (15.214) is more than 0.05. Hence there is no significant relationship between brand newspaper and coverage of newspaper.

FINDINGS AND SUGGESTIONS
FINDINGS
1.59.37% of the respondents belong to male and 40.62% of the respondents belongs to female.

2.65.10% of the respondents are single and 34.89% of the respondents are married.

3.54.68% of the respondents are known Tamil and 16.14% are known Hindi

4.36.97%% of the respondents are living in Coimbatore for 3years, 33.33% of the respondents were 4-5 years and 29.68% are more than 5 years.

5.34.89% of the respondents are UG graduates, 15.62% are PG graduates and 8.33% are doctorate.

CHI SQUARE
1. There is significant relationship between income and expenditure on newspaper buying.
2. There is significant relationship between respondents access dailies and reason for reading newspaper.
3. There is no significant relationship between brand newspaper and coverage of newspaper.

SUGGESTIONS:
➢ More advertisements can be reduced
➢ The branding takes place only if the correspondent beliefs satisfied
➢ Availability of necessary information leads to a habit of reading news paper
➢ Since the study portrays on English paper the pronunciations and the information as simple as the readers feel comfortable while reading in rural regions especially
➢ The connectivity of the news coverage on middle or last page may leads dissatisfaction among the consumer so it can be minimized

CONCLUSION:
The newspaper is all important these days. It is almost the first thing that greets you in the morning. You read what is happening in all parts of the world in the upcoming days knowledge is vital importantly the happenings around the world is must to progress in the day to day life from the study it was portrayed that the factors such as advertisement, belief of the reader and the news coverage are the highly influencing segments in the study

REFERENCE

[1] Yamamoto H, Oshima M, Hosaka T, Isa I. Solid electrolytic capacitors using an aluminum alloy electrode and conducting polymers. Synthetic Metals. 1999;104(1):33-8. | [2] Jérome D, Bechgaard K. Condensed-matter physics: superconducting plastic. Nature. 2001;410(6825):162-3. | [3] Dyer AL, Grenier CRG, Reynolds JR. A Poly(3,4-alkylenedioxythiophene) Electrochromic Variable Optical Attenuator with Near-Infrared Reflectivity Tuned Independently of the Visible Region. AdvFunct Mater. 2007;17(9):1480-6. | [4] Fehse K, Schwartz G, Walzer K, Leo K. Combination of a polyaniline anode and doped charge transport layers for high-efficiency organic light emitting diodes. Journal of Applied Physics. 2007;101(12):124509-. | [5] Koul S, Chandra R, Dhawan SK. Conducting polyaniline composite for ESD and EMI at 101GHz. Polymer. 2000;41(26):9305-10. | [6] Singh AP, Mishra M, Sambyal P, Gupta BK, Singh BP, Chandra A, et al. Encapsulation of -Fe2O3 decorated reduced graphene oxide in polyaniline core-shell tubes as an exceptional tracker for electromagnetic environmental pollution. Journal of Materials Chemistry A. 2014;2(10):3581-93. | [7] Teotia S, Singh BP, Elizabeth I, Singh VN, Raman R, Singh AP, et al. Multifunctional, Robust, Light Weight, Free Standing MWCNT/ Phenolic Composite Paper as Anode for Lithium Ion Batteries and EMI Shielding Material. RSC Advances. 2014. | [8] Kumar R, Joon S, Singh AP, Singh B, Dhawan S. Self-Supported Lightweight Polyaniline Thin Sheets for Electromagnetic Interference Shielding with Improved Thermal and Mechanical Properties. American Journal of Polymer Science. 2015;5(1A):28-39. | [9] Al-Ibrahim M, Ambacher O, Sensfuss S, Gobsch G. Effects of solvent and annealing on the improved performance of solar cells based on poly(3-hexylthiophene): Fullerene. ApplPhys Lett. 2005;86(20):201120-. | [10] Kim H-R, Kim B-S, Kim I-S. Fabrication and EMI shielding effectiveness of Ag-decorated highly porous poly(vinyl alcohol)/Fe2O3 nanofibrous composites. Materials Chemistry and Physics. 2012;135(2–3):1024-9. | [11] Paligová M, Vil áková J, Sáha P, K esálek V, Stejskal J, Quadrat O. Electromagnetic shielding of epoxy resin composites containing carbon fibers coated with polyaniline base. Physica A: Statistical Mechanics and its Applications. 2004;335(3):421-9. | [12] Singh AP, Garg P, Alam F, Singh K, Mathur RB, Tandon RP, et al. Phenolic resin-based composite sheets filled with mixtures of reduced graphene oxide, -Fe2O3 and carbon fibers for excellent electromagnetic interference shielding in the X-band. Carbon. 2012;50(10):3868-75. | [13] Rahaman M, Chaki TK, Khastgir D. Shielding with conductive polymer and carbon fiber composites. SPE Plast Res Online doi. 2011;10:1002. | [14] Sambyal P, Singh AP, Verma M, Farukh M, Singh BP, Dhawan SK. Tailored polyaniline/barium strontium titanate/expanded graphite multiphase composite for efficient radar absorption. RSC Advances. 2014;4(24):12614-24. | [15] Dhawan SK, Singh N, Rodrigues D. Electromagnetic shielding behavior of conducting polyaniline composites. SciTechnolAdv Mater. 2003;4:8. | [16] Barnes A, Despotakis A, Wright PV, Wong TCP, Chambers B, Anderson AP. Control of conductivity at microwave frequency in a poly(aniline hydrochloride) silver polymer electrolyte composite material. Electron Lett. 1996;32:358-9. | [17] Arranz-Andrés J, Pulido-González N, Fonseca C, Pérez E, Cerrada ML. Lightweight nanocomposites based on poly(vinylidene fluoride) and Al nanoparticles: Structural, thermal and mechanical characterization and EMI shielding capability. Materials Chemistry and Physics. 2013;142(2–3):469-78. | [18] Narayanan T, Sunny V, Shaijumon M, Ajayan P, Anantharaman M. Enhanced microwave absorption in nickel-filled multiwall carbon nanotubes in the S band. Electrochemical and Solid-State Letters. 2009;12(4):K21-K4. | [19] Singh AP, Gupta BK, Mishra M, Govind, Chandra A, Mathur RB, et al. Multiwalled carbon nanotube/cement composites with exceptional electromagnetic interference shielding properties. Carbon. 2013;56:86–96. | [20] chiou J-M, Zheng Q, . CDDL. Electromagnetic interference shielding by carbon fiber reinforced cement. Composites. 1989;20. | [21] Joo J, Epstein AJ. Electromagnetic radiation shielding by intrinsically conducting polymers. ApplPhys Lett. 1994;65(18):2278-80. | [22] Yang Y, Gupta MC, Dudley KL, Lawrence RW. Conductive carbon nanofiber--polymer foam structures. Advanced materials. 2005;17(16):1999-2003. | [23] Che RC, Peng LM, Duan XF, Chen Q, Liang XL. Microwave Absorption Enhancement and Complex Permittivity and Permeability of Fe Encapsulated within Carbon Nanotubes. Advanced Materials. 2004;16(5):401-5. | [24] Dhawan SK, Singh N, Rodrigues D. Electromagnetic shielding behaviour of conducting polyaniline composites. SciTechnolAdv Mater. 2003;4(2):105-13. | [25] Hoang NH, Wojkiewicz JL, Miane JL, Biscarro RS. Lightweight electromagnetic shields using optimized polyaniline composites in the microwave band. Polymers for Advanced Technologies. 2007;18(4):257-62. | [26] Anoop Kumar S, Singh A, Saini P, Khatoon F, Dhawan SK. Synthesis, charge transport studies, and microwave shielding behavior of nanocomposites of polyaniline with Ti-doped -Fe2O3. J Mater Sci. 2012;47(5):2461-71. | [27] MÄ¤kelÄ¤ T, Pienimaa S, Taka T, Jussila S, Isotalo H. Thin polyaniline films in EMI shielding. Synthetic Metals. 1997;85(1-3):1335-6. | [28] Pomposo JA, RodrÄ¤guez J, Grande H. Polypyrrole-based conducting hot melt adhesives for EMI shielding applications. Synthetic Metals. 1999;104(2):107-11. | [29] Wojkiewicz J, Fauveaux S, Miane JL. Dielectric behavior and shielding properties of polyaniline composites. ICSD01 Proceedings of the 20001 IEEE 7th International Conference on Solid Dielectrics (Cat No01CH37117). | [30] Ji X, Yao Y, Li J, Yan X, Huang F. A Supramolecular Cross-Linked Conjugated Polymer Network for Multiple Fluorescent Sensing. Journal of the American Chemical Society. 2013;135(1):74-7. | [31] Foster EL, De Leon ACC, Mangadlao J, Advincula R. Electropolymerized and polymer grafted superhydrophobic, superoleophilic, and hemi-wicking coatings. J Mater Chem. 2012;22(22):11025-. | [32] Cao Y, Smith P, Heeger AJ. Counter-ion induced processibility of conducting polyaniline. Synthetic Metals. 1993;57(1):3514-9. | [33] Adams PN, Laughlin PJ, Monkman AP. Synthesis of high molecular weight polyaniline at low temperatures. Synthetic metals. 1996;76(1):157-60. | [34] Singh AP, S. AK, Chandra A, Dhawan SK. Conduction mechanism in Polyaniline-flyash composite material for shielding against electromagnetic radiation in X-band & Ku band. Aip Advances. 2011;1(2):-. | [35] Kumar Srivastava R, Narayanan TN, Reena Mary AP, Anantharaman MR, Srivastava A, Vajtai R, et al. Ni filled flexible multi-walled carbon nanotube–polystyrene composite films as efficient microwave absorbers. Applied Physics Letters. 2011;99(11):113116--3. | [36] Singh AP, Garg P, Alam F, Singh K, Mathur RB, Tandon RP, et al. Phenolic resin-based composite sheets filled with mixtures of reduced graphene oxide, -Fe2O3 and carbon fibers for excellent electromagnetic interference shielding in the X-band. Carbon. 2012;50:3868–75. | [37] Dai H, Hafner JH, Rinzler AG, Colbert DT, Smalley RE. Nanotubes as nanoprobes in scanning probe microscopy. Nature. 1996;384:147-50. | [38] HeerWAd, Châtelain A, Ugarte D. A Carbon Nanotube Field-Emission Electron Source. Science. 1995;270:1179-80. | [39] Martel R, Schmidt T, Shea HR, Hertel T, Avouris P. Single- and multi-wall carbon nanotube field-effect transistors. ApplPhys Lett. 1998;73:2447. | [40] Williams OA, Whitfield MD, Jackman RB, Foord JS, Butler JE, Nebel CE. Formation of shallow acceptor states in the surface region of thin film diamond. ApplPhys Lett 2001;78:3460. | [41] Kleinsorge B, Ferrari AC, Robertson J, Milne WI. Influence of nitrogen and temperature on the deposition of tetrahedrally bonded amorphous carbon. J Appl Phys. 2000;88:1149.