

Name

Dr R. Gopalan

**Designation**

Scientist 'G' and Head, Centre for Automotive Energy Materials

Qualification

Ph.D.

Experience

1985 – 2008

Senior Scientist
Defence Metallurgical Research Lab, Hyderabad, India
Quasi crystals, ceramic materials, magnetic materials

2003 – 2005 & 2008-2010

Visiting Scientist & adjunct
National Institute for Materials Science, Tsukuba, Japan
Magnetic materials

2010 – Till date

Scientist-G, ARCI, Chennai
Li-ion battery, Magnetic materials, thermoelectric materials

Research areas of interest

High T_c Superconductors, Magnetic materials, Li-ion battery, Thermoelectric, structure-property correlation of functional materials

List of journal publications

1. Raman spectral signature of Mn-rich nano-scale phase segregations in carbon free $\text{LiFe}_{1-x}\text{Mn}_x\text{PO}_4$ prepared by hydrothermal technique
MB Sahana, S Vasu, N Sasikala, Anandan Srinivasan, Hossein Sepehri-Amin, C Sudakar, **R Gopalan**, *RSC Advances* (**accepted**)
2. Effect of Iron on the Enhancement of Magnetic Properties for Cobalt based Soft Magnetic Metallic Glasses
Medha Veligatla, Shravana Katakam, Santanu Das, Narendra Dahotre, **R. Gopalan**, D. Prabhu, D. Arvindha Babu, Haein Choi-Yim, Sundeep Mukherjee, *Met. Trans A* (**accepted**)
3. On the question of thermal stability and magnetic properties of $\text{Mn}_{0.6}\text{Zn}_{0.4}\text{Fe}_2\text{O}_4$ nanoparticles prepared by sol-gel method,

- S. Mallesh, S.Kavita, **R.Gopalan** and V.Srinivas, *IEEE Trans. Magn.*(accepted)
4. AC Magnetic Properties and Core Loss Behavior of Fe–P Soft Magnetic Sheets
Subhendu Kumar Manna, Delhi Babu Prabhu, **Raghavan Gopalan**, and Veeturi Srinivas.
IEEE Trans.Magn (accepted)
 5. On the temperature dependent magnetic properties of as-spun Mn–Bi ribbons
S. Kavita , U.M.R. Seelam, D. Prabhu and **R. Gopalan**, *Journal of Magnetism and Magnetic Materials*, 3 (2014) 485–489
 6. Microstructural and magnetic properties study of Fe–P rolled sheet alloys
S. Jafari, A. Beitollahi , B. EftekhariYekta, Keiu Kanada, T. Ohkubo, **R. Gopalan**, Giseller Herzer, K. Hono, *Journal of Magnetism and Magnetic Materials*, 358-359 (2014) 38-43
 7. “Preparation of LiMn₂O₄/Graphene hybrid nanostructure by combustion synthesis and their electrochemical properties.”
Dinesh Rangappa, , Erabhoina Hari Mohan, Varma Siddhartha, **Raghavan Gopalan** and Tata Narasinga Rao, *AIMS Materials Science*, 1 (2014) 174-183
 8. Efficient reduced graphene oxide grafted porous Fe₃O₄ composite as a high performance anode material for Li-ion batteries
S. Bhuvaneswari, P.M. Pratheeksha, S. Anandan, R. Dinesh, **R. Gopalan**, T. N. Rao, *Phys. Chem. Chem. Phys.* 2014, DOI: 10.1039/C3CP54778G
 9. “Fabrication of visible-light-driven ordered mesoporous TiO₂ photocatalysts and their photocatalytic applications.”
S. Anandan, T. N. Rao, **R. Gopalan**, and Y. Ikuma, *J. Nanosci. Nanotechnol.* 13 (2013) doi:10.1166/jnn.2013.8530
 10. “High saturation magnetization in Fe-0.4 wt% P alloy processed by a two step heat-treatment process”
SB Chandrasekar, D Prabhu, V Chandrasekaran, M Ramakrishna, P Venugopal Reddy, R Gopalan, *J. Magn. Magn. Mater* (accepted), 345, (2013), 239.

11. "Processing of nanopowders of Fe-Co-Sb alloy by RF Plasma technique for thermoelectric applications."
D Sivaprahasam, E. Bouchard and R Gopalan, *Materials Lett. Submitted*
12. "Laser Welding of Stainless Steel and Aluminum alloys for Lithium-ion Cell Casings "
Rajappa Tadepalli." Ravi Bathe, T. Mohan and R. Gopalan, *Scripta Mater. (submitted)*
13. "Sucrose assisted combustion synthesis of LiFePO₄/C nano-powder for lithium-ion battery cathode application."
E. Hari Mohan, N. V. V. Subba Rao, B. V. Sarada, T. N. Rao, R. Gopalan, Dinesh Rangappa *Journal of Power Sources, submitted.*
14. "High coercivity FePt-C bulk magnet processed by spark plasma sintering and hot-deformation."
R.Gopalan, T.Ohkubo and K.Hono, *J. Magn. Magn. Mater.* 322 (2010) 3423
15. "Effect of annealing on the martensitic transformation of a CoNiAl ferromagnetic shape memory alloy."
B. Rajini Kanth, N.V. Ramarao, A.K. Panda, R. Gopalan, A. Mitra, P.K. Mukhopadhyay, *J. Alloys and Compounds*, 491 (2010) 22
16. "Diffusion of Dy in Nd-Fe-B by spark plasma sintering for automotive applications."
R.Gopalan, H.S.Amin, T.Ohkubo, K. Hono, S. Hirosawa, . (REPM 2010)
17. "Large low-field inverse magnetocaloric effect near room temperature in Ni_{50-x}Mn_{37+x}In₁₃ Heusler alloys."
N. V. Rama Rao, R. Gopalan, V. Chandrasekaran and K. G. Suresh, *Applied Physics A: Materials Science & Processing*, 99 (2010) 265
18. "Effect of Fe addition on microstructure and magnetocaloric effect in Gd₅SixGe_{3.9-x}Fe_{0.1} alloys with varying Si/Ge ratio."

D.M. Rajkumar , M. Manivel Raja , R. Gopalan , A.K. Singh, V. Chandrasekaran and, K.G. Suresh, *Intermetallics*,18 (2010) 518

19. "Improved Magnetoelectricity by Uniaxial Field Pressed and Sintered Composites in BaTiO₃ (x) - BaFe₁₂O₁₉ (1-x) system " (x = 0.8, 0.6)
A. Srinivas, R Gopalan and V Chandrasekaran, *Materials Science Engineering B for Solid state Devices*, 172 (2010) 289
20. "Microstructure and coercivity variation in melt-spun Sm-Co-Fe-Zr ribbons "
K. Suresh, R Gopalan, DV Sridhara rao, AK Singh and V Chandrasekaran, *Intermetallics* , 18 (2010) 2244
21. "Structural, magnetic and magneto-transport studies in bulk Ni_{55.2}Mn_{18.1}Ga_{26.7} alloy".
I. Babita, R. Gopalan, V., Chandrasekaran, and S. Ram, *J. Appl. Phys.*105, (2009) 0239036.
22. "Magnetic Phase transformation and magnetocaloric studies in ferromagnetic Ni₅₅Mn₂₀Ga₂₅ Heusler alloys"
J. Babita, R. Gopalan, and S. Ram, *J. Phys : Conf. series* 144, (2009), 012066
23. "Dynamic inversemagnetocaloric and martensite transition in Ni₄₉Mn₃₈Sn₁₃ nanocrystals in low magnetic fields."
K. Babita, R. Gopalan, S. Ram, S. and V. Chandrasekaran, *Phill. Mag. Letter* 89, (2009) 399
24. "Direct evidence for Cu concentration variation and its correlation to coercivity in Sm(Co_{0.74}Fe_{0.1}Cu_{0.12}Zr_{0.04})_{7.4} ribbons."
R. Gopalan, K. Hono, A. Yan and O. Gutfleisch, *Scripta Mater.* 60 (2009)764
25. "Room temperature multiferroism and magnetoelectric coupling in BaTiO₃_BaFe₁₂O₁₉ system."
A. Srinivas, R. Gopalan, V. Chandrasekharan, *Solid State Comm.* 149 (2009) 367
26. "Study on morphology and magnetic behavior of SmCo₅ and SmCo₅/Fe nanoparticles synthesized by surfactant-assisted ball milling."
P. Saravanan, M. Premkumar, , AK Singh, R Gopalan and V Chandrasekaran, *J. Alloys and Compd.* 480 (2009) 645
27. "Effect of sintering temperature on the structure and magnetic properties of SmCo₅/Fe nanocomposite magnets prepared by spark plasma sintering "
P. Saravanan, R Gopalan, D. Sivaprakasham and V Chandrasekaran, *Intermetallics*, 17 (2009) 517

28. "Consolidation of hydrogenation–disproportionation-desorption–recombination processed Nd-Fe-B magnets by spark plasma sintering "
K. Suresh, T. Ohkubo, Y. K. Takahashi, K. Oh-ishi, R. Gopalan, K. Hono, T. Nishiuchi, N. Nozawa, and S. Hirose, *J. Magn. Magn. Mater.* 321 (2009) 3681
29. "High saturation magnetization and microstructure in melt-spun Fe-P ribbons "
R Gopalan, Y.M. Chen, T. Ohkubo and K. Hono, *Scripta Mater* 61 (2009) 544
30. "Phase coexistence, microstructure and magnetism in Ni-Mn-Sb alloys NV Rama Rao "
R Gopalan, V Chandrasekaran and KG Suresh, *J. Phys. D: Appl Phys.* 42 (2009) 065002.
31. "Coupled magnetostructural transformations in melt-spun Ni₅₅Mn_{19.6}Ga_{25.4} ribbon: An electron spin resonance study "
N V Rama Rao, R Gopalan, J Arout Chelvane, V Chandrasekaran, and K G Suresh, *J. Appl. Phys.* 105 (2009) 123904.
32. "Textured resin bonded Sm(Co,Fe,Cu)₅ nanostructured magnets exploiting magnetic field and surfactant assisted milling "
P, Saravanan, R Gopalan, R Priya, P. Ghosal and V Chandrasekaran, *J. Alloys and Compd* 477 (2009) 322
33. "Effect of Fe-substitution on microstructure, hysteresis behaviour and magnetocaloric effect in Gd₅Si₂Ge₂ Alloys "
DM Rajkumar, M Manivel Raja, R Gopalan, A Sambasiva Rao and V Chandrasekaran *J. Magn. Magn. Mater.* 321 (2009) 1300
34. "Anisotropic Nd-Fe-B nanocrystalline magnets processed by spark plasma sintering and *in-situ* hot pressing of hydrogenation–decomposition–desorption–recombination powder" R Gopalan, H. Sepehri-Amin, K. Suresh, T. Ohkubo, K. Hono, T. Nishiuchi, N. Nozawa and S. Hirose, *Scripta Mater.* 61 (2009) 978.
35. "Composition, structure and magnetic properties of sputter deposited Ni–Mn–Ga ferromagnetic shape memory thin films "
A. Annadurai, A.K. Nandakumar, S. Jayakumar, M.D. Kannan, M. Manivel Raja, S. Bysak, R. Gopalan, V. Chandrasekaran, *Journal of Magnetism and Magnetic Materials*, 321 (2009) 630-634
36. "Studies on ordering temperature and martensite stabilization in Ni₅₅Mn_{20–x}Ga_{25+x} alloys" I. Babita,

- R. Gopalan, M, Rajasekhar, M. and S. Ram, *J. of Alloys and Compd*, 475 (2009) 276.
37. "Composition, structure and magnetic properties of sputter deposited Ni–Mn–Ga ferromagnetic shape memory thin films "
A. Annadurai, A.K. Nandakumar, S. Jayakumar, M.D. Kannan, M. Manivel Raja, S. Bysak, R. Gopalan, V. Chandrasekaran, *J. Magn. Magn. Mater*, 321 (2009) 630
 38. "Structural and Mössbauer studies on mechanical milled SmCo₅/ -Fe nanocomposite magnetic powders "
P. Saravanan, M. Manivel Raja, R. Gopalan, N.V. Rama Rao and V.Chandrasekaran *Intermetallics* 16 (2008) 636
 39. "Amorphization, nanocrystallization and magnetic properties of mechanically milled Sm-Co magnetic powders "
R. Gopalan, K. Suresh, D.V. Sridhara Rao, A. K. Singh, N.V. Rama Rao, G. Bhikshamaiah, V. Chandrasekaran, *Int. J. Mat. Res.* 99 (2008) 773
 40. "Microstructure, magnetic and Mössbauer studies on spark plasma sintered SmCo₅/Fe nanocomposite magnets "
N.V. Rama Rao, P. Saravanan, R Gopalan, R., M. Manivel Raja, D.V. Sreedhara Rao, V. Chandrasekaran, D. Sivaprahasam and R. Ranganathan, *J.Phys D: Appl. Phys.* 41 (2008) 065001
 41. "Phase relationship, microstructure and magnetocaloric effect in Gd_{1-x}(Si_{0.5}Ge_{0.5})_x alloys
M. Manivel Raja "
R. Gopalan, D.M. Rajkumar, R. Balamuralikrishnan, and V. Chandrasekaran, KG Suresh and K.Hono, *J.Phys D: Appl. Phys* 41 (2008) 055008
 42. "Magnetocaloric effect in high energy ball milled Gd₅Si₂Ge₂ and Gd₅Si₂Ge₂/Fe nano powders "
D.M.Rajkumar, M. Manivel Raja, R. Gopalan and V. Chandrasekaran, *J. Magn.and Magn. Materials* 320 (2008) 1479
 43. "Martensite transformation and magnetic property dependence on the annealing temperature in Ni-rich Ni-Mn-Ga alloy "
R. K. Singh and R. Gopalan, *Advanced Mater. Res.* 52 (2008) 57
 44. "Magneto-structural transformation, microstructure and Magnetocaloric effect in Ni-Mn-Ga Heusler alloys "
I Babita, R Gopalan, M. Manivel Raja, V chandrasekaran, and S Ram, *J. Appl. Phys.* 102 (2007) 013906
 45. "Magnetic and structural transformation in off-stoichiometric NiMnGa alloys "

- R K Singh, M Shamsudin, R. Gopalan, R. P. Mathur and V. Chandrasekaran, *Mat. Sci. & Engg. A* 476 (2008)195
46. "Microstructure and Magnetocaloric Effect in $Gd_5Si_2Ge_{2-x}Ga_x$ Alloys "
D.M. Raj Kumar, M. Manivel Raja, R. Gopalan, R. Balamuralikrishnan, A.K. Singh and V. Chandrasekaran , *J. Alloys & Compd* 461, (2008) 14-20
 47. "Synthesis and characterization of nanomaterials "
P. Saravanan, R.Gopalan and V.Chandrasekaran, *Def. Sci. J. (India)* 58 (2008) 504
 48. "Phase formation and microstructural investigation in Fe substituted $SmCo_5$ melt- spun ribbons "
K. Suresh, R. Gopalan, G. Bhikshamaiah, AK Singh, DV Sridhara Rao, K. Muraleedharan, and V. Chandrasekaran , *J. Alloys and Compd* 463 (2008) 73
 49. "Spark Plasma sintered Sm_2Co_{17} -FeCo nanocomposiite permanent magnets synthesized by high energy ball milling "
G. Sreenivasulu, R Gopalan, V. Chandrasekaran, G. Markandeylu, KG Suresh and BS Murty, *Nanotechnology*, 19 (2008) 335701
 50. "Thermal, Structural and magnetic characterization of Ni-Mn-Ga sheets fabricated by powder in tube roll bonding technique "
R.K. Singh and R Gopalan, *Mater.Sc. Engg.B*, 151 (2008) 199
 51. "Mössbauer studies on structural ordering and magnetic properties of melt-spun Ni-Fe-Ga ribbons "
N. V. Rama Rao, R. Gopalan, M. Manivel Raja, V. Chandrasekaran¹ and K. G. Suresh, *Appl. Phys. Lett.* 93 (2008) 202503
 52. "Inverse magnetocaloric effect in ferromagnetic Ni-Mn-Sn Heusler alloys "
I. Babita, R. Gopalan, V. Chandrasekaran, V. and S. Ram, *Indian Journal of Pure and Applied Physics*, (2008)
 53. "Mössbauer study of nano-crystalline Li-Zn ferrites "
P. Vijaya Bhasker Reddy, V. Raghavendra Reddy, Ajay Gupta, R. Gopalan, Ch. Gopal Reddy, *Hyperfine Interactions*, 183 (2008) 81
 54. "Structural, magnetic and magneto-transport Studies in melt-spun Ni-Mn-Ga Ribbons " N.V.R Rao, B. Ingale, R. Gopalan, V. Chandrasekaran, N.K, Chaubey, A. Poddar, and R. Ranganathan, SINP, Kolkata, 11-16th December 2007, A. Ghoshray, and B. Bandyopadhyay,., *American Institute of Physics*, CP1003, pp. 201-203.
 55. "Coercivity of melt-spun $Sm(Co_{0.9}Cu_{0.1})_{4.8}$ ribbons "

- K Suresh, R Gopalan, AK Singh, G. Bhikshamaiah, V Chandrasekaran and K Hono, *J. Alloys and Compounds*, 436 (2007) 358
56. "Structural and magnetic studies on spark plasma sintered SmCo₅/Fe nanocomposite magnets "
NV Ramarao, R Gopalan, M Manivelraja, V Chandrasekaran, D Chakravorty, R Sundresan and K Hono, *J. Magn. Magn. Materials*, 312 (2007) 252
57. "Coercivity enhancement in melt-spun SmCo₅ by Sn addition "
AA Kundig, R Gopalan, T. Ohkubo and K Hono, *Scripta Mater.*, 54 (2006) 2047
58. "Phase transformation and magnetic properties in Ni-Mn-Ga Heusler alloys "
I. Babita, M. Manivel raja, R Gopalan, V Chandrasekaran and S Ram, *J. Alloys and Compounds*, 432 (2007) 23
59. "Magneto-structural transformation in melt-spun Ni-Mn-Ga ribbons"
NV Rama Rao, R Gopalan, M Manivel Raja, B Majumdar and V Chandrasekaran *Scripta Mater.* 56 (2007) 405
60. "SmCo₅/Fe nanocomposite magnetic powders processed by surfactant and magnetic field-assisted ball milling "
P. Saravanan, R. Gopalan, N.V. Rama Rao, M. Manivel Raja and V. Chandrasekaran, *J. Phys D: Applied Phys* 40(2007)5021
61. "Structural, Magnetic and Magneto-transport Studies in Melt-spun Ni-Mn-Ga Ribbons " N.V. Rama Rao, Babita Ingale, R. Gopalan , V. Chandrasekaran, Niraj K Chaubey, A.Poddar , R. Ranganathan and K.G. Suresh, *AIP Proceedings on ICMM 2007*
62. " Magnetocaloric Studies in Gd₅Si₂Ge_{2-x}Fe_x Alloys "
D.M. Rajkumar, M. Manivel Raja, R. Gopalan and V. Chandrasekaran, *AIP Proceedings on ICMM 2007*
63. " Science and technology of permanent magnets "
R Gopalan, *Defence Science Spectrum* (India) 2006, p.179
64. "Identification of the cell boundary phase in the isothermally aged commercial Sm(Co_{0.725}Fe_{0.1}Cu_{0.12}Zr_{0.04})_{7.4} sintered magnet "
R Gopalan, T Ohkubo and K Hono, *Scripta Mater.*, 54 (2006) 863 1345
65. "Huge coercivity of SmCo_x and Sm(CoCu)₅ films prepared by magnetron sputtering "
J. Zhang, YK Takahashi, R Gopalan and K. Hono, *J. Magn. Magn.* 310 (2006) 1
66. " Magnetic properties of mechanically milled SmCo permanent magnet materials with the TbCu₇ structure "

- RJ. Justin, A Naraynasamy, R Gopalan, V Chandrasekaran, B Jeyadevan and K Tohiji, *Materials Trans. of JIM*, 47(2006) 2264
67. "X-ray diffraction characterization of mechanically milled SmCoFe nano magnetic powders by Rietveld Refinement "
K Suresh, AK Singh, R Gopalan and V Chandrasekaran, Proceedings of Advanced X-ray techniques in research and industry, (ed). AK Singh, IOS Press, Amsterdam, The Netherlands, (2005) 503-510
68. " Investigation on structure-magnetic property correlation in melt-spun $\text{Sm}(\text{Co}_{0.56}\text{Fe}_{0.31}\text{Cu}_{0.04}\text{Zr}_{0.05}\text{B}_{0.04})_z$ ribbons "
R. Gopalan, D. H. Ping, K. Hono, M. Q. Huang, B. R. Smith, Z. Chen and B. M. Ma, *J. Magn. Magn. Mater.* 292 (2005) 150
69. "Nanoscale microstructure and its effect on coercivity in melt-spun $\text{Sm}(\text{Co}_{0.74}\text{Fe}_{0.1}\text{Cu}_{0.12}\text{Zr}_{0.04}\text{B}_{0.015})_{7.4}$ ribbons."
R. Gopalan, X. Xiong, T. Ohkubo and K. Hono, *J. Magn. Magn. Mater.* 295 (2005) 7
70. "Mechanically milled and spark plasma sintered FePt-based bulk magnets with high coercivity."
S. Gopalan, A.A. Kündig, M. Ohnuma, S. Kishimoto and K. Hono, *Scripta Materialia*, 52 (2005) 761
71. "Sm(Co,Cu)₅/Fe exchange spring multilayer films with high energy product."
J. Zhang, Y. K. Takahashi, R. Gopalan, and K. Hono, *Appl. Phys. Lett.* 86 (2005) 122509
72. "Platelet microstructure and magnetic properties in rapidly solidified $\text{Sm}_{20.8}\text{Co}_{63.4}\text{Cu}_{2.4}\text{Zr}_{1.6}\text{B}_4$ ribbons "
R Gopalan, T Ohkubo and K Hono, *Scripta Mater*, 53 (2005) 367
73. "Fabrication of Bulk nanocrystalline Fe-C alloy by spark plasma sintering of mechanically milled powder."
HW Zhang, R Gopalan, T Mukai and K Hono, *Scripta Mater*, 53 (2005) 863
74. "Microstructure and its correlation to magnetic properties in 2:17 type (Sm,Gd)-Co-Fe-Cu-Zr alloys."
AC Abhyankar, R Gopalan, AK Singh, K Muraleedharan, Vydehi A Joshi, TSRK Sastry and V Chandrasekaran *J. Mater Sci.*, 39 (2004) 3433
75. "Microstructural evolution and its dependence on magnetic properties in melt-spun Sm-Co-Cu-B and Sm-Co-Fe-Cu-B ribbons."
R. Gopalan, D. H. Ping and K. Hono, *J. Magn. Magn. Mater.* 284 (2004) 321

76. "Microstructure and magnetic properties of melt-spun $\text{Sm}(\text{Co}_{0.58}\text{Fe}_{0.31}\text{Cu}_{0.04}\text{Zr}_{0.05}\text{B}_{0.02})_z$ ribbons."
R. Gopalan, D. H. Ping, K. Hono, M. Q. Huang, B. R. Smith, Z. Chen and B. M. Ma, *J. Appl. Phys.* 95 (2004) 4962
77. "The Quasi-Crystalline Phase in the Mg-Al-Zn System."
T Rajasekharan, D Akhtar, R Gopalan and K.Muraleedharan, *Nature*, 322, (1986)528
78. "Quasi- Crystalline Precipitates with Icosahedral Morphology."
T Rajasekharan, R Gopalan, D Akhtar and D Banerjee, *Scripta Metall*, 21,(1987)289
79. "Do Quasi- Crystals Exist?"
T Rajasekharan, R.Gopalan and D. Akhtar, *Key Engineering Materials*, 13-15,(1987) 249
80. "On a New Metastable Phase in the Al-Mg System."
D. Akhtar, R Gopalan and T Rajasekharan, *Z. Metallkunde*, 78, (1987)201
81. "A Microstructural Characterization of Solution – Treated titanium Alloy Ti-6Al-4V." G Sridhar, R Gopalan, and D S Sarma, *Metallography*, 20, (1987)291
82. "X-Ray determination of Microstructural Parameters of Eroded Cu-Al Alloys."
G Bhikshamaiah, S V Suryanarayana, S V Nagender Naidu, T Rajasekharan and R Gopalan, *Wear*, 125, (1988) 241
83. "Combustion Process for the Synthesis of $\text{YBa}_2\text{Cu}_3\text{O}_7$."
R. Gopalan, Y S N Murthy and T Rajasekharan, S. Ravi and V Seshu Bai, *Materials Letters*, 8, (1989) 441
84. "Effect of Boron on the Quasi-crystalline Phase Formation in Rapidly Solidified Al-Mn Alloys"
R Gopalan, D. Akhtar and T Rajasekharan, *Z. Metallkunde*, 81, (1990) 111
85. "A New Co-Precipitation Technique for the preparation of Superconducting $\text{Yba}_2\text{Cu}_3\text{O}_7$ "
Y S N Murthy, R Gopalan, Sarala Raoot, T Rajasekharan, S Ravi and V Seshu Bai, *Materials Letters*, 9, (1990) 154
86. "Microstructural investigations of melt grown $\text{Yba}_2\text{Cu}_3\text{O}_7$."
T Rajasekharan, R. Gopalan and T Roy, *Pramana-Jl. of Phys.*, 37, (1991) L173
87. "On the composition of 110K Superconductor in (Bi,Pb)-S-Ca-Cu-O System "
V Seshu Bai, S Ravi, T Rajasekharan and R. Gopalan, *J.Appl. Phys.*, 70,(1991)4378
88. "Critical current density of a sample of melt grown YBCO."

V Ganesan, R Srinivasan, R. Gopalan and T. Rajasekharan, *Solid State Communications*, 87 , (1993) 1077

89. "Critical current density of a sample of melt grown $Y_{1.2}Ba_{1.8}Cu_{2.4}O_x$ ",
V Ganesan, R. Srinivasan , R. Gopalan and T. Rajasekharan, *Pramana-Jl. of Phys.*,
41 (1993) 61
90. "Study of iron doped $La_{2-x}Sr_xCuO_4$."
P. Shah, , A.Gupta, S.N. Kane, T. Rajasekharan, and R. Gopalan, *Nucl. Inst. and
Methods in Phys. Res. Section B*, 76 (1993), 325
91. "Magnetic shielding using High temperature superconductors."
V. Ganesan, R. Srinivasan, S. Aswathy, K D Chandrasekaran, B. Srinivas, U V Varada
Raju, G V Subba Rao, R. Gopalan and T. Rajasekharan, *Bull. Mater. Sci.*, 17, (1994) 87
92. "Optimization of the microstructure for high critical current density in melt grown Y-Ba-Cu-O"
R.Gopalan, V.Seshu Bai, T. Rajasekharan, G. Rangarajan *Superconductors – News
Letter*, 8 (1995) 1
93. "Pole figure studies in melt grown Y-Ba-Cu-O sample."
R.Gopalan, A K Singh, T. Rajasekharan, G. Rangarajan and U V Varadaraju,
J.Mater. Sci. Lett. 14, (1995) 1043 – 1045
94. "Microstructural and magnetisation study in melt grown Y-Ba-Cu-O samples." R.Gopalan,
T.Roy, T. Rajasekharan, G. Rangarajan and N. Haribabu, *Physica C*, 244 (1995) 106 –
114
95. " Microstrcutural investigations on melt grown RE-Ba-Cu-O (RE=Y, Gd & Nd) systems"
R.Gopalan, T. Rajasekharan, T. Roy, G. Rangarajan, *J.Mater. Sci.*, 31, (1996) 2557
96. "Structural and superconducting properties of melt grown Y-Ba-Cu-O superconductors."
R.Gopalan, T. Rajasekharan, T. Roy, G. Rangarajan, V. Ganesan and R. Srinivasan, *J.
Mater. Res.*, 11 (1996) 2406
97. "Evolution of Texture in melt grown Y-123 and Gd-123 high temperature
superconductors."
R.Gopalan, A K Singh and T Rajasekharan, *J. Mater. Sci.*, 32 (1997) 2595
98. "Texture studies in high energy $SmCo_5$ permanent magnets."
R.Gopalan, AK Singh and V Chandrasekaran, in '*Texture in Materials Research*', (Eds.)
R K Ray and A K Singh, The Oxford & IBH Publishing Co. New Delhi (1998), 281

99. "X-ray Diffraction and Microstructural Studies in 2:17 type Sm-Co Magnetic Alloys containing Fe,Cu and Zr."
R.Gopalan, TSRK Sastry and V Chandrasekaran, *J. Mater. Res.*, 14, (1999), 2430
100. "An overview on 2:17 type SmCo magnets."
R Gopalan and V Chandrasekaran, *Magnetcs Society of India Bulletin*, 20 (2000), 27
101. "Structural investigations in 2:17 type SmCo alloys."
R Gopalan, K Muraleedharan, TSRK Sastry, S Suwas, V Joshi and V Chandrasekaran
Trans. MRS-J, 26 (2001), 801
102. "Studies on structural transformation and magnetic properties in Sm₂Co₁₇ type alloys "
R Gopalan, K Muraleedharan, TSRK Sastry, AK Singh, DV Sridhara Rao, V Joshi and V Chandrasekaran , *J. Mater. Sci.*, 36 (2001),4117
103. "The development of magnetic materials based on magnetic length scales."
R Gopalan and V Chandrasekaran, *Magnetics Society of India Bulletin*, 23 (2002), 15
104. "Studies on Sm(Co_{0.9-x}Fe_xCu_{0.1})_{4.8} nano composite magnetic powder."
K. Suresh, R Gopalan, A K Singh, K Muraleedharan, D V Sridhara Rao and V Chandrasekaran, *Indian Journal of Physics*, 78A (2003) 115
105. "Metallurgical and magnetic characterisation of Mechanically milled Sm(Co_{0.9-x}Fe_xCu_{0.1})_{4.8} alloys"
R Gopalan, K Suresh, AK Singh and V Chandrasekaran, *Scripta Mater*, 48 (2003) 1555

List of patents

1. Dinesh Rangappa, R. Gopalan and Tata Narasinga Rao, A process for preparing nanocrystalline olivine structure transition metal phosphate material, Indian Patent Application No. 405/DEL/2012, 14 February 2012.
2. Nanocomposite magnet and process for producing the same
J. Zhang, Y. Takahashi, R. Gopalan and K. Hono, WO/2006/064937,
International application no. PCT/JP2005/02320. International filing date: 13-12-2005
3. Fabrication of bulk nanocrystalline Fe-C alloy by spark plasma sintering of mechanically milled powder- *Japanese patent filed*

Affiliation to Professional Societies

1. Life Member of Magnetic Society of India
2. Member of Magnetic Society of Japan (2003-2005)
3. Member Japan Institute of Metals (2003-2005)
4. Life Member Indian Scientists Association of Japan

Awards and honors

1. Best paper award in 1988 at DMRL
2. Best Ph.D thesis award (Prof. Laskar Memorial Prize) in Physics at Indian Institute of Technology, Chennai, India, 1996
3. Selection by UNESCO based on science citation index of the published work, 2005-2006
4. National Science Day Medal Award, 2006 in DRDO
5. Best poster presentation award 'on nanocomposite SmCo₅/Fe magnets' – Ferroic 2006
6. Best poster presentation award 'on magneto-structural transformation studies in Ni-Mn-Ga-alloys' – Materials Research society of India 2007
7. Technology award at DMRL for development Sm₂Co₁₇ magnets (2008)
8. "Metallurgist of the Year" award by Indian Institute of Metals in 2013
9. MRSI medal award in 2014

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