

References:

- 1 M. D. Welch, *Mineral Mag*, 2003, **67**, 419–420.
- 2 S. Sasaki, C. T. Prewitt, J. D. Bass and W. A. Schulze, *Acta Crystallogr C*, 1987, **43**, 1668–1674.
- 3 K. S. Aleksandrov and J. Bartolomé, *Phase Transitions: A Multinational Journal*, 2001, **74**, 255–335.
- 4 V. M. Goldschmidt, *The Laws of Crystallochemistry*, 1926.
- 5 A. M. Glazer, *Acta Crystallogr B*, 1972, **28**, 3384–3392.
- 6 P. M. Woodward, *Acta Crystallogr B*, 1997, **53**, 32–43.
- 7 M. W. Lufaso and P. M. Woodward, *Acta Crystallogr B*, 2004, **60**, 10–20.
- 8 M. A. Carpenter and C. J. Howard, *Acta Crystallogr B*, 2009, **65**, 134–146.
- 9 C. J. Howard and H. T. Stokes, *Crystallography Acta Crystallographica Section B Acta Cryst.*
- 10 C. J. Howard and M. A. Carpenter, *Acta Crystallogr B*, 2010, **66**, 40–50.
- 11 A. P. Ramirez, *Journal of Physics: Condensed Matter*, 1997, **9**, 8171.
- 12 K.-I. Kobayashi, T. Kimura, H. Sawada, K. Terakura and Y. Tokura, *Nature*, 1998, **395**, 677–680.
- 13 R. E. Camley and J. Barnaś, *Phys Rev Lett*, 1989, **63**, 664.
- 14 J. G. Bednorz and K. A. Müller, *Zeitschrift für Physik B Condensed Matter*, 1986, **64**, 189–193.
- 15 M. Kim, G. M. McNally, H. H. Kim, M. Oudah, A. S. Gibbs, P. Manuel, R. J. Green, R. Sutarto, T. Takayama, A. Yaresko, U. Wedig, M. Isobe, R. K. Kremer, D. A. Bonn, B. Keimer and H. Takagi, *Nature Materials* 2022 21:6, 2022, **21**, 627–633.
- 16 M. Kim, S. Klenner, G. M. McNally, J. Nuss, A. Yaresko, U. Wedig, R. K. Kremer, R. Pöttgen and H. Takagi, *Chemistry of Materials*, 2021, **33**, 6787–6793.
- 17 A. Filippetti and N. A. Hill, *Phys Rev B*, 2002, **65**, 195120.
- 18 T. Kimura, T. Goto, H. Shintani, K. Ishizaka, T. Arima and Y. Tokura, *Nature*, 2003, **426**, 55–58.
- 19 A. M. Dos Santos, A. K. Cheetham, T. Atou, Y. Syono, Y. Yamaguchi, K. Ohoyama, H. Chiba and C. N. R. Rao, *Phys Rev B*, 2002, **66**, 064425.
- 20 B. D. Cullity and C. D. Graham, *Introduction to magnetic materials*, John Wiley & Sons, 2011.

- 21 Allan H. Morrish, *The Physical Principle of Magnetism*, 2001.
- 22 S. Blundell, *Condensed Matter Physics (Oxford Series Publications, 2001)*.
- 23 P. Weiss, *Comptes Rendus*, 1906, **143**, 1136–1139.
- 24 R. White, *J Appl Phys*, 1969, **40**, 1061–1069.
- 25 E. O. Wollan and W. C. Koehler, *Physical Review*, 1955, **100**, 545.
- 26 E. Bousquet and A. Cano, *Journal of Physics: Condensed Matter*, 2016, **28**, 123001.
- 27 B. G. John, *Physical Review*, 1955, **100**, 564–573.
- 28 J. B. Goodenough, *Magnetism and the chemical bond*, Interscience publishers, 1963, vol. 1.
- 29 J. Kanamori, *Journal of Physics and Chemistry of Solids*, 1959, **10**, 87–98.
- 30 Goodenough J.B. and A. L. Loeb, *Phys. Rev*, 1955, **98**, 391.
- 31 P. W. Anderson, *Physical Review*, 1959, **115**, 2.
- 32 C. Zener, *Physical Review*, 1951, **82**, 403–405.
- 33 C. Zener, *Physical Review*, 1951, **81**, 440–444.
- 34 I. Dzyaloshinsky, *Journal of physics and chemistry of solids*, 1958, **4**, 241–255.
- 35 T. Moriya, *Phys Rev Lett*, 1960, **4**, 228.
- 36 T. Moriya, *Physical review*, 1960, **120**, 91.
- 37 W. H. Meiklejohn and C. P. Bean, *Physical Review*, 1957, **105**, 904.
- 38 J. Nogués and I. K. Schuller, *J Magn Magn Mater*, 1999, **192**, 203–232.
- 39 P. K. Manna and S. M. Yusuf, *Phys Rep*, 2014, 535, 61–99.
- 40 J. Krishna Murthy and A. Venimadhav, *Appl Phys Lett*, , DOI:10.1063/1.4855135/25873.
- 41 C. Won, Y. Z. Wu, E. Arenholz, J. Choi, J. Wu and Z. Q. Qiu, , DOI:10.1103/PhysRevLett.99.077203.
- 42 S. K. Giri, A. Poddar and T. K. Nath, *AIP Adv*, 2011, **1**, 32110.
- 43 R. Saha, A. Sundaresan and C. N. R. Rao, , DOI:10.1039/c3mh00073g.
- 44 J. R. Sahu, C. R. Serrao, N. Ray, U. V. Waghmare and C. N. R. Rao, *J Mater Chem*, 2006, **17**, 42–44.
- 45 I. B. Krynetski and V. M. Matveev, *Solid State*.
- 46 K. Sardar, M. R. Lees, R. J. Kashtiban, J. Sloan and R. I. Walton, *Chem. Mater*, 2011, **23**, 48–56.
- 47 A. Jaiswal, R. Das, K. Vivekanand, T. Maity, P. M. Abraham, S. Adyanthaya and P. Poddar, *J Appl Phys*, , DOI:10.1063/1.3275926.
- 48 A. H. Cooke, D. M. Martin and M. R. Wells, *Journal of Physics C: Solid State Physics*, 1974, **7**, 3133.

- 49 B. Rajeswaran, D. I. Khomskii, A. K. Zvezdin, C. N. R. Rao and A. Sundaresan, *Phys Rev B*, 2012, **86**, 214409.
- 50 T. Yamaguchi and K. Tsushima, *Phys Rev B*, 1973, **8**, 5187.
- 51 G. Gorodetsky, R. M. Hornreich, S. Shaft, B. Sharon, A. Shaulov and B. M. Wanklyn, *Phys Rev B*, 1977, **16**, 515.
- 52 X. Qian, L. Chen, S. Cao and J. Zhang, *Solid State Commun*, 2014, **195**, 21–25.
- 53 R. M. Hornreich, Y. Komet, R. Nolan, B. M. Wanklyn and I. Yaeger, *Phys Rev B*, 1975, **12**, 5094.
- 54 G. V. S. Rao, B. M. Wanklyn and C. N. R. Rao, *Journal of Physics and Chemistry of Solids*, 1971, **32**, 345–358.
- 55 A. K. Tripathi and H. B. Lal, *J Mater Sci*, 1982, **17**, 1595–1609.
- 56 C. R. Serrao, A. K. Kundu, S. B. Krupanidhi, U. V Waghmare and C. N. R. Rao, *Phys Rev B*, 2005, **72**, 220101.
- 57 K. Yoshii, *Appl Phys Lett*, , DOI:10.1063/1.3644473.
- 58 K. Yoshii, *Mater Res Bull*, 2012, **47**, 3243–3248.
- 59 T. Bora and S. Ravi, *J Magn Magn Mater*, 2014, **358**, 208–211.
- 60 S. M. Yusuf, A. Kumar and J. V. Yakhmi, *Appl Phys Lett*, 2009, **95**, 182506.
- 61 A. Kumar and S. M. Yusuf, *Phys Rep*, 2015, **556**, 1–34.
- 62 L. Néel, *Ann Phys (Paris)*, , DOI:10.1051/anphys/194812030137i.
- 63 Y. K. Jeong, J.-H. Lee, S.-J. Ahn and H. M. Jang, *Solid State Commun*, 2012, **152**, 1112–1115.
- 64 A. Kumar, S. M. Yusuf, L. Keller and J. V. Yakhmi, *Phys Rev Lett*, 2008, **101**, 207206.
- 65 K. Yoshii and A. Nakamura, *J Solid State Chem*, 2000, **155**, 447–450.
- 66 A. A. Belik, *Inorg Chem*, 2013, **52**, 8529–8539.
- 67 L. G. Antoshina, A. N. Goryaga and V. V San'kov, *Physics of the Solid State*, 2000, **42**, 1488–1491.
- 68 V. A. Khomchenko, I. O. Troyanchuk, R. Szymczak and H. Szymczak, *J Mater Sci*, 2008, **43**, 5662–5665.
- 69 J. Hemberger, S. Lobina, H. A. Krug Von Nidda, N. Tristan, V. Y. Ivanov, A. A. Mukhin, A. M. Balbashov and A. Loidl, *Phys Rev B Condens Matter Mater Phys*, , DOI:10.1103/PhysRevB.70.024414.
- 70 S. Zhang, L. Luan, S. Tan and Y. Zhang, *Appl Phys Lett*, 2004, **84**, 3100–3102.

- 71 J.-S. Jung, A. Iyama, H. Nakamura, M. Mizumaki, N. Kawamura, Y. Wakabayashi and T. Kimura, *Phys Rev B*, , DOI:10.1103/PhysRevB.82.212403.
- 72 O. Peña, C. Moure, P. Barahona, M. Baibich and G. Martinez, *Physica B Condens Matter*, 2006, **384**, 57–61.
- 73 O. Peña, K. Ghanimi, C. Moure, D. Gutiérrez and P. Durán, .
- 74 K. Yoshii, *J Solid State Chem*, 2001, **159**, 204–208.
- 75 Y. Su, J. Zhang, Z. Feng, L. Li, B. Li, Y. Zhou, Z. Chen and S. Cao, *J Appl Phys*, , DOI:10.1063/1.3457905.
- 76 Y. L. Su, J. C. Zhang, L. Li, Z. J. Feng, B. Z. Li, Y. Zhou and S. X. Cao, <http://dx.doi.org/10.1080/00150193.2010.492729>, 2011, **410**, 102–108.
- 77 B. Tiwari, M. K. Surendra and M. S. Ramachandra Rao, *Journal of Physics Condensed Matter*, , DOI:10.1088/0953-8984/25/21/216004.
- 78 S. Cao, H. Zhao, B. Kang, J. Zhang and W. Ren, *Sci Rep*, , DOI:10.1038/srep05960.
- 79 N. Sharma, B. K. Srivastava, A. Krishnamurthy and A. K. Nigam, *Solid State Sci*, 2010, **12**, 1464–1468.
- 80 N. Sharma, B. K. Srivastava, A. Krishnamurthy and A. K. Nigam, *J Alloys Compd*, 2012, **545**, 50–52.
- 81 R. M. Hornreich, *J Magn Magn Mater*, 1978, **7**, 280–285.
- 82 Y. Ren, T. T. M. Palstra, D. I. Khomskii, E. Pellegrin, A. A. Nugroho, A. A. Menovsky and G. A. Sawatzky, *Nature*, 1998, **396**, 441–444.
- 83 H. Shen, Z. Cheng, F. Hong, J. Xu, S. Yuan, S. Cao and X. Wang, *Appl Phys Lett*, 2013, **103**, 192404.
- 84 S. J. Yuan, W. Ren, F. Hong, Y. B. Wang, J. C. Zhang, L. Bellaiche, S. X. Cao and G. Cao, *Phys Rev B Condens Matter Mater Phys*, 2013, **87**, 184405.
- 85 Y. Cao, S. Cao, W. Ren, Z. Feng, S. Yuan, B. Kang, B. Lu and J. Zhang, *Appl Phys Lett*, , DOI:10.1063/1.4882642.
- 86 J. Mao, Y. Sui, X. Zhang, Y. Su, X. Wang, Z. Liu, Y. Wang, R. Zhu, Y. Wang, W. Liu and J. Tang, *Appl Phys Lett*, 2011, **98**, 192510.
- 87 L. H. Yin, Y. Liu, S. G. Tan, B. C. Zhao, J. M. Dai, W. H. Song and Y. P. Sun, *Mater Res Bull*, 2013, **48**, 4016–4021.
- 88 R. Schmidt, J. Romero, A. David, U. Amador and E. Mora, .
- 89 G. A. Tompsett and N. M. Sammes, *J Power Sources*, 2004, **130**, 1–7.

- 90 R. Shukla, A. K. Bera, S. M. Yusuf, S. K. Deshpande, A. K. Tyagi, W. Hermes, M. Eul and R. Pöttgen, *Journal of Physical Chemistry C*, 2009, **113**, 12663–12668.
- 91 M. Taheri, R. K. Kremer, S. Trudel and F. S. Razavi, *J Appl Phys*, 2015, **118**, 124306.
- 92 S. J. Yuan, Y. M. Cao, L. Li, T. F. Qi, S. X. Cao, J. C. Zhang, L. E. DeLong and G. Cao, *J Appl Phys*, , DOI:10.1063/1.4821516.
- 93 M. Taheri, F. S. Razavi, Z. Yamani, R. Flacau, C. Ritter, S. Bette and R. K. Kremer, *Phys Rev B*, 2019, **99**, 054411.
- 94 H. Jian Zhao, W. Ren, Y. Yang, al -, A. Ali Khan, A. Ahlawat, A. Sharma, C. Ritter, M. Ceretti and W. Paulus, *Journal of Physics: Condensed Matter*, 2021, **33**, 215802.
- 95 L. Hou, L. Shi, J. Zhao, S. Pan, Y. Xin and X. Yuan, *Journal of Physical Chemistry C*, 2020, **124**, 15399–15405.
- 96 T. Bora and S. Ravi, *J Appl Phys*, 2013, **114**, 33906.
- 97 T. Bora and S. Ravi, *J Magn Magn Mater*, 2015, **386**, 85–91.
- 98 L. E. Smart and E. A. Moore, .
- 99 S. T. Aruna and A. S. Mukasyan, , DOI:10.1016/j.cossms.2008.12.002.
- 100 A. S. Mukasyan, P. Dinka, A. S. Mukasyan and P. Dinka, *Adv Eng Mater*, 2007, **9**, 653–657.
- 101 B. D. (Bernard D. Cullity, *Elements of x-ray diffraction*, Addison-Wesley Publishing Company, Inc, 1978.
- 102 J. Rodríguez-Carvajal, *Physica B Condens Matter*, 1993, **192**, 55–69.
- 103 T. Roisnel and J. Rodríguez-Carvajal, .
- 104 H. M. Rietveld, *J Appl Crystallogr*, 1969, **2**, 65–71.
- 105 Abràmoff M.D., Magalhães P.J. and Ram S.J., *Biophotonics international* , 2004, **11**, 36–42.
- 106 S. Gupta, M. K. Mahapatra and P. Singh, *Materials Science and Engineering: R: Reports*, 2015, **90**, 1–36.
- 107 A. Nandy and S. K. Pradhan, *Dalton Transactions*, 2015, **44**, 17229–17240.
- 108 M. C. Weber, J. Kreisel, P. A. Thomas, M. Newton, K. Sardar and R. I. Walton, *Phys Rev B Condens Matter Mater Phys*, 2012, **85**, 054303.
- 109 Y. Zhao, D. J. Weidner, J. B. Parise and D. E. Cox, *Critical phenomena and phase transition of perovskite-data for NaMgF₃ perovskite. Part II*, 1993, vol. 76.
- 110 G. Caglioti, A. Paoletti and F. P. Ricci, *Nuclear Instruments*, 1958, **3**, 223–228.
- 111 V. Mote, Y. Purushotham and B. Dole, *Journal of Theoretical and Applied Physics*, 2012, **6**, 1–8.
- 112 Z. Xiang, W. Li and Y. Cui, *RSC Adv*, 2018, **8**, 8842–8848.

- 113 S. Yin, M. S. Seehra, C. J. Guild, S. L. Suib, N. Poudel, B. Lorenz and M. Jain, , DOI:10.1103/PhysRevB.95.184421.
- 114 V. K. Tripathi and R. Nagarajan, *ACS Omega*, 2017, **2**, 2657–2664.
- 115 R. Venkateswara, M. M. Mannepalli, S. Mohan and R. Ranjith, *Bull. Mater. Sci*, 2017, **40**, 1503–1511.
- 116 S. S. Nair, M. Mathews and M. R. Anantharaman, *Chem Phys Lett*, 2005, **406**, 398–403.
- 117 A. J. Deotale and R. V. Nandedkar, *Mater Today Proc*, 2016, **3**, 2069–2076.
- 118 L. H. Yin, J. Yang, R. R. Zhang, J. M. Dai, W. H. Song and Y. P. Sun, *Appl Phys Lett*, , DOI:10.1063/1.4862665.
- 119 T. Yamanaka, N. Hirai and Y. Komatsu, *American Mineralogist*, 2002, **87**, 1183–1189.
- 120 Gillespie R.J., *Can. J. Chem*, 2011, **39**, 318–323.
- 121 P. Gupta and P. Poddar, *RSC Adv*, 2015, **5**, 10094–10101.
- 122 B. M. Haque, D. B. Chandra, P. Jiban, I. Nurul and Z. Abdullah, *Mater Sci Semicond Process*, 2019, **89**, 223–233.
- 123 T. Yamaguchi, *Journal of Physics and Chemistry of Solids*, 1974, **35**, 479–500.
- 124 M. Tripathi, T. Chatterji, H. E. Fischer, R. Raghunathan, S. Majumder, R. J. Choudhary and D. M. Phase, *Phys Rev B*, 2019, **99**, 014422.
- 125 T. Sau, P. Yadav, S. Sharma, R. Raghunathan, P. Manuel, V. Petricek, U. P. Deshpande and N. P. Lalla, *Phys Rev B*, 2021, **103**, 144418.
- 126 L. Wang, G. H. Rao, X. Zhang, L. L. Zhang, S. W. Wang and Q. R. Yao, *Ceram Int*, 2016, **42**, 10171–10174.
- 127 L. Wang, S. W. Wang, X. Zhang, L. L. Zhang, R. Yao and G. H. Rao, *J Alloys Compd*, 2016, **662**, 268–271.
- 128 A. Durán, R. Escamilla, R. Escudero, F. Morales and E. Verdín, *Phys Rev Mater*, 2018, **2**, 014409.

List of Publications

- 1) **Manish Yadav** and Chandana Rath, Structural and optical properties along with magnetization reversal and bipolar switching in $\text{CeCr}_{1-x}\text{Fe}_x\text{O}_3$ ($x = 0$ and 0.05) nanoparticles, **Journal of Magnetism and Magnetic Materials**, 543 (2022) 168610.
- 2) **Manish Yadav**, Priyanka Tiwari and Chandana Rath, Structure and magnetic transitions along with magnetization switching in nanoparticles of $\text{CeCr}_{1-x}\text{Fe}_x\text{O}_3$ ($0 \leq x \leq 0.1$), **Journal of Solid State Chemistry**, 303 (2021)123537.
- 3) **Manish Yadav**, Lekshmi S Kumar, Deepankar Das, Qiang Zhang, and Chandana Rath, Temperature dependent magnetic structure and sign reversal exchange bias in CeCrO_3 nanoparticles. (*Under review*)
- 4) **Manish Yadav** and Chandana Rath, Structural, optical and magnetic properties of $\text{CeCr}_{1-x}\text{Fe}_x\text{O}_3$ ($0.2 \leq x \leq 0.5$) nanoparticle. (*Under review*)
- 5) Priyanka Tiwari, **Manish Yadav**, Aiswarjya Bastia, G. C. Pandey and Chandana Rath, Structural transformation, magnetization reversal and magnetic switching in Cr doped GdMnO_3 perovskite, **New journal of Chemistry**, 45 (2021) 22396-22405.
- 6) Sanjana Rajput, **Manish Yadav**, Tarang dehuri, Akhilesh Kumar Yadav, Chandana Rath, Coexistence of tetragonal and cubic phase induced complex magnetic behavior in CoMn_2O_4 nanoparticle, **Nanotechnology**, 34 (2023) 425702 (15pp).

Conferences and Workshop:

1. 65thDAE Solid State Physics Symposium (DAE SSPS 2021) held at DAE Convention Centre, Anushakti nagar, Mumbai-94 during December 15-19, 2021
Title: “*Magnetization switching effect due to flipping of Ce^{3+} moment in one step synthesized $CeCrO_3$* ” (**Poster Presentation**)
2. International and Inter University Centre for Nanoscience and Nanotechnology (IIUCNN) & School of Energy Materials (SEM), Mahatma Gandhi University, Kottayam, Kerala, India (**Poster Presentation**)
Title: “*Structural and magnetic properties along with bipolar magnetization switching in nanoparticles of $CeCr_{1-x}Fe_xO_3$ ($x=0$ and 0.5)*”
3. International Conference On Beyond Fossil Fuels: The Future of Alternative Energy Technologies. During 23-25 July 2022 (**Poster presentation**)
Title: “*Structure and magnetic transitions along with magnetization switching in nanoparticles of $CeCr_{1-x}Fe_xO_3$ ($0 < x < 0.1$)*”
4. Magnetic structure determination from neutron diffraction data. MAGSTR 2020, during 28 September to 2 October 2020 organized by ORNL USA. (**Workshop**)