

Faculty Profile of Dr. B. Murugesapandian



Dr. B. Murugesapandian
Assistant Professor
Department of Chemistry

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Research Area

- Multi-functional materials
- Coordination Chemistry
- Main group chemistry

Education & Career

Education

Ph. D.

Subject : Chemistry

Institution : Indian Institute of Technology Kanpur

Affiliated University : Indian Institute of Technology Kanpur

Year of Award : 2008

M. Sc.,

Subject: Chemistry

Institution : V.H.N.S.N. College

Affiliated University : Madurai Kamaraj University, India

Year of Award : 2002

B. Sc.,

Subject: Chemistry

Institution: V.H.N.S.N. College

Affiliated University: Madurai Kamaraj University, India

Year of Award: 2000

Career**At Bharathiar University (Reverse Order)**

UGC-Assistant Professor (UGC-FRP) : Sep 2014 to Till Date

Past Experience

Research Staff : May 2013 to Sep 2014 at Nanyang Technological University, Singapore

Post-Doctoral Fellow : Oct 2011 to Mar 2013 at Osaka University, Japan

Post-Doctoral Fellow : Apr 2011 to Sep 2011 at Karlsruhe Institute of Technology, Karlsruhe, Germany

Alexander Von Humboldt Fellow : Feb 2009 to Jan 2011 at Karlsruhe Institute of Technology, Karlsruhe, Germany

Awards

- **Alexander von Humboldt Fellowship**, Germany, Post-Doctoral Research, **Feb 2009- Jan 2011**

- **Senior Project Associate**, IIT-Kanpur, Kanpur, UP, India **May 2008-Oct-2008**
- **Senior Research Fellowship**, Council of Scientific and Industrial Research (CSIR), New Delhi, India, **Feb 2005-Jan-2008**
- **Junior Research Fellowship**, Council of Scientific and Industrial Research (CSIR), New Delhi, India, **Feb 2003-Jan 2005**
- Cleared **Joined CSIR UGC-JRF and Eligibility for lectureship - NET** held on **23.06.2002**
- Qualified in **Graduate Aptitude Test in Engineering (GATE)** in **2002**
- Received **a merit certificate in 2002** for **University First Rank** in M. Sc. Chemistry
- Received **gold medal in 2002** for **First Rank** in M. Sc Chemistry.
- Received **gold medal in 2000** for **First Rank** in B. Sc. Chemistry

Membership

Visits

Collaborators

Others

Projects

Funded Projects (National Level)

- [Ongoing-02](#)
- [Completed-02](#)

1. Mitigation of fluorosis and fluoride sensing: An amalgamation of biology and chemistry

Co-Principal Investigator,

TANSCHÉ, Government of Tamilnadu,

May 2021 to April 2024

Rs.60,00,000

2. Synthesis and application of anticancer compounds

Principal Investigator,

RUSA 2.0 BCTRC, Bharathiar University,

December 2020 to November 2022,

Rs. 11,43,000

1. "Design and Synthesis of polynuclear complexes Supported by Bis-calix[4]-pyrrole Schiff Base Macrotricyclic ligands and their Application in Small Molecule Activation",

Principal Investigator,

Department of Science and Technology, Science and Engineering Research Board, New Delhi,

22nd September 2015 to 21st September 2018,

Rs.21,20,981

2. UGC- Start Up Grant

Principal Investigator,

University Grants Commission, New Delhi,

April 2016 to March 2018

Rs.6,00,000

Consultancy Projects

- [Ongoing](#)
- [Completed](#)

Ongoing Consultancy Project Informations

Completed Consultancy Project Informations

Research Guidance

- [Post Doc.](#)
- [Ph.D.](#)
- [M.Phil.](#)
- [M.Sc.](#)

Ongoing

Title

Name

Completed

Title

Name

Ongoing

Candidate Name: **K. Suganthirani**

Date of Registration: November 2017

Candidate Name: **Aiswarya Janardhanan**

Date of Registration: January 2021

Candidate Name: **R. Kishore Kumar**

Date of Registration: January 2022

Completed

Candidate Name: **K. Santhiya**

Title of Thesis : *"Functional Fluorescent Organic Materials: Design, Synthesis, Optical Properties and Sensing Applications"*

Year of Award: **2020**

Candidate Name: **B. Tharmalingam**

Title of Thesis : *"Star-shaped Triaminoguanidine as Scaffold for the Construction of Hydrazone Based Multi-Functional Materials and Its Sensing Application"*

Year of Award: **2021**

Candidate Name: **M. Mathivanan**

Title of Thesis : *"Design, Development and Sensing Applications of Triphenylamine and 7-Diethylamino-4-hydroxycoumarin Based Multi-Functional Material"*

Year of Award: **2021**

Candidate Name: **O Anitha**

Title of Thesis : *"Pyrimidine bis hydrazone derivatives: Design, Synthesis, Optical properties, Stimuli responsiveness, sensing and Coordination features"*

Date of Registration: January 2021(thesis submitted on October 2023)

Ongoing

Sample Data.

Completed

Candidate Name: **G. Dhamodiran**

Title of Thesis : "Novel N,N-Diethylamino Phenol Functionalized C₃ Symmetric AIEgens and its Turn-off Fluorescent Cu²⁺ Detection".

Year of Award: **2018**

Candidate Name: **T. Devaraj**

Title of Thesis : "*Al³⁺ induced Brightening of Hydroxy-Coumarin Acylhydrazone and its Selective Detection of Pyrophosphate.*"

Year of Award: **2019**

Candidate Name: **Anitha O.**

Title of Thesis : "*A Novel Pyrimidine Based Optical Switch for Sequential Detection of Al³⁺ and PPI Ions*"

Year of Award: **2020**

Ongoing

Sample Data.

Completed

Sample Data.

Research Publication

- [International](#)
- [National](#)
- [Patents](#)
- [Conferences](#)
- [Books / Chapters](#)
- [Database](#)

1. An AIE active acidochromic pyrimidine-functionalized two-in-one fluorescent probe for selective relay detection of $\text{Al}^{3+}/\text{Zn}^{2+}$ and PPI with various detection applications.

O. Anitha, J. Aiswarya, T. Thiruppathiraja, S. Lakshmipathi J. G. Malecki and **B. Murugesapandian***
New J. Chem., 47, 18461 (2023).

2. Diethylaminophenol appended pyrimidine bis hydrazone for the sequential detection of Al^{3+} and PPI ions,

O. Anitha, T. Thiruppathiraja, S. Lakshmipathi and **B. Murugesapandian***
Spectrochim. Acta A: Mol. and Biomol. Spectrosc., 302, 123077 (2023).

3. Visualization of latent fingerprints using an AIE-active unsymmetrical azine: 2-Naphthol-pyrrole acrylate conjugate and its fluorescent sensing of Cu^{2+} and S^{2-} ions, smartphone and logic gate applications,

B. Tharmalingam, O. Anitha, J. Aiswarya, T. Thiruppathiraja, S. Lakshmipathi and **B. Murugesapandian***
J. Photochem. Photobiol. A, 442, 114757 (2023)

4. [A unique methanol responsiveness, AIE, acidochromism and mechanofluorochromic features of flexible ethylenediamine bridged rhodamine B-diethylamino hydroxycoumarin conjugate,](#)

M. Mathivanan, B. Tharmalingam, O. Anitha, T. Thiruppathiraja, S. Lakshmipathi, J. G. Malecki and **B. Murugesapandian**
J. Mol. Liq., 382, 121845 (2023).

5. [Multi-stimuli responsiveness of pyrimidine bishydrazone: AIE, tuneable luminescence, white light emission, mechanochromism, acidochromism and its anticounterfeiting applications,](#)

O. Anitha, M. Mathivanan, B. Tharmalingam, T. Thiruppathiraja, S. Ghorai, R. Natarajan, V. Thiagarajan, S. Lakshmipathi and **B. Murugesapandian***

Dyes Pigm., 212, 111091 (2023).

6 [A new 7-\(diethylamino\)coumarin and 4-\(diethylamino\)phenol appended unsymmetrical thiocarbohydrazone: Detection of moisture in organic solvent and sequential fluorimetric detection of Cu²⁺ ions and cysteine,](#)

K. Santhiya, M. Mathivanan, B. Tharmalingam, O. Anitha, S. Ghorai, R. Natarajan and **B. Murugesapandian***

J. Photochem. Photobiol. A, 432, 114105 (2022).

7. [Substitution dependent multi-color AIE behavior and ESIPT active A-D-A type triphenylamine supported bis unsymmetrical azine derivatives and their antibacterial activity,](#)

M. Mathivanan and **B. Murugesapandian***

Dyes Pigm., 203, 110367 (2022).

8. [Nitrogen rich triaminoguanidine-pyrrole conjugate as supramolecular synthon for the construction of charge-assisted hydrogen bonded network with various carboxylic acids,](#)

B. Tharmalingam, M. Mathivanan, O. Anitha, W. Kaminsky and **B.**

Murugesapandian*

J. Solid State Chem., 305, 122637 (2022).

9. [All-in-one type ESIPT-active multi-stimuli responsive 7-diethylamino-4-hydroxycoumarin-rhodamine B hydrazone as molecular switches and the reversible photochromic features of its zinc ensemble.](#)

M. Mathivanan, B. Tharmalingam, O. Anitha, C.H. Lin, V. Thiagarajan, **B.**

Murugesapandian*

Materials Chemistry Frontiers, 5, 8183-8196 (2021).

10. [A new 7-diethylamino-4-hydroxycoumarin based reversible colorimetric/fluorometric probe for sequential detection of Al³⁺/PPi and its potential use in biodetection and bioimaging applications,](#)

M. Mathivanan, B. Tharmalingam, T. Devaraj, A. Murugan, C.-H. Lin, M. Jothi, and **B.**

Murugesapandian*

New J. Chem., 45, 6067-6079 (2021).

11. [Multifunctional behavior of bis-acylhydrazone: Real-time detection of moisture in organic solvents, halochromism and aggregation induced emission,](#)

K. Santhiya, S. K. Sem, R. Natarajan, and B. **Murugesapandian***

Dyes Pigm., 185, 108891 (2021).

12. [Development of \$C_3\$ symmetric triaminoguanidine-2-naphthol conjugate: Aggregation induced emission, colorimetric and turn-off fluorimetric detection of \$Co^{2+}\$ ion, smartphone and real sample applications,](#)

B. Tharmalingam, M. Mathivanan, O. Anitha, and **B. Murugesapandian***

J. Photochem. Photobiol. A, 406, 112983 (2021).

12. [Electronically induced steric clash: synthesis of \$NMe_2\$ -modified \$\beta\$ -diketiminato-supported boron difluoride compounds,](#)

B. Murugesapandian, R. Ganguly, P. Lee, M. Petkovic, J. Clyburne, D. Vidovic,

Aust. J. Chem., 73(12) 1219-1225 (2020).

14. [\$C_3\$ -symmetric triaminoguanidine based colorimetric and fluorometric chemosensor: sequential detection of \$Zn^{2+}\$ /PPI, its RGB performance for detection of \$Zn^{2+}\$ ion and construction of IMPLICATION logic gate,](#)

B. Tharmalingam, M. Mathivanan and **B. Murugesapandian***

Spectrochim. Acta A: Mol. and Biomol. Spectrosc., 242, 118749 (2020).

15. [Simple \$C_3\$ -symmetric triaminoguanidine-triphenylamine conjugate as an efficient colorimetric sensor for Cu\(II\) and fluorescent sensor for Fe\(III\) ions.](#)

M. Mathivanan, B. Tharmalingam, K.S. Mani, V. Thiagarajan and **B.**

Murugesapandian*

Spectrochim. Acta A: Mol. and Biomol. Spectrosc., 234, 118235 (2020).

16. [Selective detection of pyrophosphate anion by zinc ensemble of \$C_3\$ -symmetric triaminoguanidine-pyrrole conjugate and its biosensing applications,](#)

B. Tharmalingam, M. Mathivanan, K.S. Mani, W. Kaminsky, A. Raghunath, M. Jothi, E. Perumal, **B. Murugesapandian***

Anal. Chim. Acta, 1103, 192-201 (2020).

17. [ESIPT active multi-color aggregation induced emission features of triphenylamine-salicylaldehyde based unsymmetrical azine family.](#)

M. Mathivanan, B. Tharmalingam, C.H. Lin, B. V. Pandiyan, V. Thiagarajan and **B.**

Murugesapandian*

CrystEngComm, 22, 213-228 (2020).

18. [Star-shaped ESIPT active mechanoresponsive luminescent AIEgen and its on-off-on emissive response to \$Cu^{2+}\$ / \$S^{2-}\$.](#)

B. Tharmalingam, M. Mathivanan, G. Dhamodiran, K.S. Mani, M. Paranjothy and **B. Murugesapandian***
ACS Omega, 4, 12459-12469 (2019).

19. [Coumarin based hydrazone as an ICT-based fluorescence chemosensor for the detection of Cu²⁺ ions and the application in HeLa cells,](#)

K.S. Mani, R. Rajamanikandan, B. Murugesapandian, R. Shankar, G. Sivaraman, M. Ilanchelian, S. P. Rajendran,

Spectrochim. Acta A: Mol. and Biomol. Spectrosc., 214, 170-176 (2019).

20. [D-A-D structured bis-acylhydrazoneexhibiting aggregation-induced emission, mechanochromicluminescence, and Al \(III\) detection,](#)

K. Santhiya, S. K.Sen, R. Natarajan, R. Shankar and **B. Murugesapandian***
J. Org. Chem., 83, 10770-10775 (2018).

21. [Enantioselective approach towards the synthesis of spiroindeno \[1,2-b\] quinoxalinepyrrolothiazoles as antioxidant and antiproliferative,](#)

K. S. Mani, B. Murugesapandian, W. Kaminsky, S. P. Rajendran,

Tetrahedron Lett., 59, 2921-2929 (2018).

22. [Cerium complex-catalyzed oxidation of arylmethanols under atmospheric pressure of dioxygen and its mechanism through a side-on \$\mu\$ -peroxodicerium\(IV\) Complex.](#)

M. Paul, S. Shirase, Y. Morimoto, L. Mathey, B. Murugesapandian, S. Tanaka, S. Itoh, H. Tsurugi, H. K. Mashima,

Chem. Eur. J., 22, 4008-4014 (2016).

23. [Dihaloboreniumcations stabilized by a four membered N-heterocyclic carbene: electron deficiency compensation by asymmetric structural changes.](#)

M.Q.Y. Tay, B. Murugesapandian, Y. Lu, R. Ganguly, K. Rei, and D. Vidović,

Dalton Trans., 43, 15313-15316 (2014).

24. [{CH₂\(PPh₂NSi-Me₃\)\(Ph₂PS\)} and {CH\(PPh₂NSi-Me-\)\(Ph₂PS\)}- as a ligand in zinc chemistry- synthesis and structures,](#)

M. Kuzdrowska, B. Murugesapandian, L. Hartenstein, M. T. Gamer, N. Arleth, S. Blechert, and P. W. Roesky,

Eur. J. Inorg. Chem., 4851-4857 (2013).

25. [\(Iminophosphoranyl\)\(thiophosphoranyl\)methanide{CH\(PPh₂NSi-Me-\)\(Ph₂PS\)}-as a ligand in rare-earth-element chemistry,](#)

B. Murugesapandian, M. Kuzdrowska, M. T. Gamer, L. Hartenstein and P.W. Roesky, *Organometallics*, 32, 1500-1506 (2013)

26. [A phosphorus-based compartmental ligand, \(S\)P\[N\(Me\)N=CH-C₆H₃-2-O-3-OMe\]₃ \(LH₃\), enables the assembly of luminescent heterobimetalliclinear {L₂Zn₂Ln}+ \[Ln = Gd, Tb, Nd and Eu\] complexes,](#)

V. Chandrasekhar, P. Bag, B.Murugesapandian, and M. D. Pandey, **Dalton Trans.**, 42, 15447-15456 (2013)

27. [Synthesis and structure of lead\(II\) complexes of \[\(η⁶-benzenecarboxylato\)tricarbonylchromium.](#)

B. Murugesapandian and P. W. Roesky, **Eur. J. Inorg. Chem.**, 292-297 (2012).

28. [Synthesis and Structure of Zinc\(II\) and Cadmium\(II\) Complexes with \[\(η⁶-Benzenecarboxylate\) Chromium Tricarbonyl and Pyrazole Derivatives,](#)

B. Murugesapandian and P. W. Roesky, **Z. anorg. allg. Chem.**, 637, 1818-1823 (2011).

29. [Hydrogen bonding networks in \[\(η⁶-arene\)Cr\(CO\)₃\] complexes,](#)

B. Murugesapandian and P. W. Roesky, **Heteroat. Chem.**, 22, 294-300 (2011).

30. [Synthesis and Structure of Cadmium\(II\) complexes with \(η⁶-benzenecarboxylate\)tricarbonylchromium,](#)

B. Murugesapandian and P. W. Roesky, **Eur. J. Inorg. Chem.**, 4103-4108 (2011).

31. [Coordination Polymers of Zinc with \[\(η⁶-benzenecarboxylate\) Chromium Tricarbonyl,](#)

B. Murugesapandian and P. W. Roesky, **Inorg. Chem.**, 50 (5) 1698-1704 (2011).

32. [Synthesis, Structure, and Two-Photon Absorption Studies of a Phosphorus-Based TrisHydrazone Ligand \(S\)P\[N\(Me\)N=CH-C₆H₃-2-OH-4-N\(CH₂CH₃\)₂\]₃ and Its Metal Complexes,](#)

V. Chandrasekhar, R. Azhakar, B. Murugesapandian, T. Senapati, P. Bag, M. D. Pandey, S. K. Maurya and D. Goswami. **Inorg. Chem.**, 49 (9), 4008-4016 (2010).

33. [Sodium and Potassium Compounds of \$\[\(\eta^6\text{-benzenecarboxylate}\)\text{Cr}\(\text{CO}\)_3\]\$ and \$\[\(\eta^6\text{-1,4-benzenedicarboxylate}\)\text{-Cr}\(\text{CO}\)_3\]\$](#) ,
B. Murugesapandian and P. W. Roesky,
Dalton Trans., 39, 9598-9603 (2010).
34. [Phosphorus-Supported Ligands for the Assembly of Multimetal Architectures](#),
V. Chandrasekhar and B. Murugesapandian,
Acc. Chem. Res., 42 (8), 1047-1062 (2009).
35. [Synthesis, Structure, and Magnetism of Heterobimetallic Trinuclear Complexes \$\{\[\text{L}_2\text{Co}_2\text{Ln}\]\[\text{X}\]\}\$ \$\[\text{Ln} = \text{Eu}, \text{X} = \text{Cl}; \text{Ln} = \text{Tb}, \text{Dy}, \text{Ho}, \text{X} = \text{NO}_3; \text{LH}_3 = \(\text{S}\)\text{P}\[\text{N}\(\text{Me}\)\text{N}=\text{CH}-\text{C}_6\text{H}_3\text{-2-OH-3-OMe}\]_3\$: A 3d-4f Family of Single-Molecule Magnets](#),
V. Chandrasekhar, B. Murugesapandian, J. J. Vittal and R. Clérac,
Inorg. Chem., 48 (3), 1148-1157 (2009).
36. [Trinuclear Heterobimetallic \$\text{Ni}_2\text{Ln}\$ complexes \$\[\text{L}_2\text{Ni}_2\text{Ln}\]\[\text{ClO}_4\]\$ \$\(\text{Ln} = \text{La}, \text{Ce}, \text{Pr}, \text{Nd}, \text{Sm}, \text{Eu}, \text{Gd}, \text{Tb}, \text{Dy}, \text{Ho}, \text{and Er}; \text{LH}_3 = \(\text{S}\)\text{P}\[\text{N}\(\text{Me}\)\text{N}=\text{CH}-\text{C}_6\text{H}_3\text{-2-OH-3-OMe}\]_3\$ \): From Simple Paramagnetic Complexes to Single-Molecule Magnet Behavior](#),
V. Chandrasekhar, B. Murugesapandian, R. Boomishankar, A. Steiner, J. J. Vittal and R. Clérac,
Inorg. Chem., 47(11), 4918-4929 (2008).
37. [A Tunable Coordination Response of the Phosphorus-Based Hexadentate Ligand \$\(\text{S}\)\text{P}\[\text{N}\(\text{Me}\)\text{N}=\text{CH}-\text{C}_6\text{H}_4\text{-o-OH}\]_3\$ \(\$\text{LH}_3\$ \): Synthesis and Structure of LM \$\(\text{M} = \text{Sc}, \text{Cr}, \text{Mn}, \text{Fe}, \text{Co}, \text{Ga}\)\$](#) ,
V. Chandrasekhar, R. Azhakar, B. Murugesapandian, J. F. Bickley and A. Steiner,
Eur. J. Inorg. Chem., 7, 1116-1124 (2008).
38. [Cyclophosphazene-Supported Tetranuclear Copper Assembly Containing 15 Contiguous Inorganic Rings](#),
V. Chandrasekhar, G. T. SenthilAndavan, R. Azhakar and B. Murugesapandian,
Inorg. Chem., 47 (6), 1922-1924 (2008).
39. [Synthesis, structure and metallation of spiro- \$\text{N}_3\text{P}_3\(\text{O}_2\text{C}_{12}\text{H}_8\)\(\text{OC}_5\text{H}_4\text{N-2}\)_4\$: A heptacoordinate Co\(II\) in the molecular structure of \$\text{N}_3\text{P}_3\(\text{O}_2\text{C}_{12}\text{H}_8\)\(\text{OC}_5\text{H}_4\text{N-2}\)_4 \cdot \text{Co}\(\text{NO}_3\)_2\$](#) ,
V. Chandrasekhar, B. Murugesapandian and R. Azhakar,
Polyhedron, 27, 255-262 (2008).

40. [A phosphorus-supported multisite coordination ligand containing three imidazolyl arms and its metalation behaviour. An unprecedented co-existence of mononuclear and macrocyclic dinuclear Zn\(II\) complexes in the same unit cell of a crystalline lattice,](#)

V. Chandrasekhar, R. Azhakar, B. Murugesapandian, R. Boomishankar and A. Steiner,

Dalton Trans., 43, 5962-5969 (2008).

41. [Synthesis, structure and magnetic properties of linear heterobimetallic trinuclear \$Mn_2Ln\$ \(\$Ln = Eu, Gd, Dy\$ \) complexes,](#)

V. Chandrasekhar, B. Murugesapandian, R. Boomishankar, A. Steiner and R. Clérac,

Dalton Trans., 38, 5143-5145 (2008).

42. [42- and 46-Membered Phosphorus-Based Macrocycles,](#)

V. Chandrasekhar, G. T. SenthilAndavan, R. Azhakar and B. Murugesapandian,

Synthesis and Reactivity in Inorganic, Metal-Organic, and Nano-Metal Chemistry, 37, 725-728 (2007).

43. [Linear Trinuclear Mixed-Metal \$CoII-GdIII-CoII\$ Single-Molecule Magnet: \$\[L_2Co_2Gd\]\[NO_3\] \cdot 2CHCl_3\$ \(\$LH_3 = \(S\)P\[N\(Me\)NCH-C_6H_3-2-OH-3-OMe\]_3\$ \),](#)

V. Chandrasekhar, B. Murugesapandian, R. Azhakar, J. J. Vittal and R. Clérac,

Inorg. Chem. 46 (13), 5140-5142 (2007).

44. [Cyclophosphazene-based multi-site coordination ligands,](#)

V. Chandrasekhar, P. Thilagar and B. Murugesapandian,

Coord. Chem. Rev., 251, 1045-1074 (2007).

45. [36- and 42-Membered cyclophosphazene-containing macro-cycles,](#)

V. Chandrasekhar, G. T. SenthilAndavan, R. Azhakar and B. Murugesapandian,

Tetrahedron Lett., 47, 8365-8368 (2006).

46. [Cyclocarbophosphazene-Containing Tetrameric Assemblies Formed by the Mediation of P-O-P and P-O-Cu Linkages,](#)

V. Chandrasekhar, R. Azhakar, V. Krishnan, A. Athimoolam and B. Murugesapandian,

J. Am. Chem. Soc., 128 (21), 6802-6803 (2006).

47. [Di- and Trinuclear Complexes Derived from Hexakis\(2-](#)

[pyridyloxy\)cyclotriphosphazene. Unusual P-O Bond Cleavage in the Formation of \$\[{\(L'CuCl\)}_2{\(Co\(NO_3\)\)}Cl\]\$ \(\$L' = N_3P_3\(OC_5H_4N\)_5\(O\)\$ \),](#)

V. Chandrasekhar, B. Murugesapandian and R. Azhakar,
Inorg. Chem. 45 (9), 3510–3518 (2006)

National Publications - Reverse Chronological Order

Patent Info

Conference Info

Books & Chapters Related Info

Database Related Info

Alumini Reflections: