National Conference on
SCIENCE, TECHNOLOGY AND APPLICATIONS OF RARE EARTHS
(STAR-2022)

September 22-23, 2022

SOUVENIR

Jointly Organized by

Rare Earths Association of India &
Department of Physics and Chemistry
Sri Venkateswara University,
Tirupati - 517502

Prof. K. Raja Reddy
Vice-Chancellor,
S.V. University, Tirupati.

I am delighted to know that the Department of Physics & Chemistry and Rare Earths Association of India, Mumbai are jointly organising the National Conference on Science Technology and Applications of rare Earths on the Theme "**Role of Rare Earths in make in India and Atmanirbhar Bharath"** on 22nd & 23rd September 2022.

The theme of the conference is more relevant in the present scenario and is a step towards achieving our vision in becoming a world-class academic and research institution in order to produce good Scientists/Researchers. Research about Rare Earth provides excellent opportunities in the field of lasers and modern fiber optic communications.

I am glad to note that several eminent academicians and scientists from all over India are participating in this Conference. I am quite sure that the conference will provide a common platform for deliberations and discussions which would lead to mutual progress and development in Academic and Research activities. I wish this conference will be a foundation for the growth of new ideas towards a better tomorrow.

I wish the organizers of this conference all successes.

(Prof. K. Raja Reddy)
Vice-Chancellor

Message

STAR-2022 PROGRAMME		
Venu: Senate Hall, Neelam Sanjeeva Reddy Bhavan (Adm. Building), S.V. University, Tirupati		
22-09-2022 (Day 1, Thursday)		
8.30 AM to 5.00 PM	Registration (Please avoid during sessions)	
9.30 AM to 11.15 AM	Inauguration/Keynote address	
11.15 AM to 11.45 AM	Tea Break	
11.45 AM to 12.30 PM	Plenary-1	Dr. M.L.P. Reddy
12.30 PM to 1.00 PM	IT-1	Dr. D.K. Singh
1.00 PM to 2.00 PM	Lunch (Dept. of Physics)	
1.00 PM to 3.00 PM	Poster-1 (Dept. of Physics/Chemistry) PP-001 to PP-040. Please stick your poster on respective boards latest by 12.00 Noon.	
3.00 PM to 3.45 PM	Plenary-2	Dr.R. Gopalan
3.45 PM to 4.00 PM	Tea	
4.00 PM to 4.30 PM	IT-2	Dr.P. Prabhakara Rao
4.30 PM to 5.00 PM	IT-3	Dr. S. K. Sahu
5.00 PM to 6.00 PM	Oral 1 to 5	
23-09-2022 (Day 2, Friday)		
9.00 AM to 2.00 PM	Registration (Please avoid during sessions)	
9.30 AM to 10.15 AM	Plenary-3	Dr. S. Natarajan
10.15 AM to 10.45 AM	IT-4	Dr. S. J. Dhoble
10.45 AM to 11.15 AM	IT-6	Dr.Vibha Chopra
11.15 AM to 11.30 AM	Tea	
11.30 AM to 11.45 AM	IYoG-2022 Contribution by Dept. of Physics, SVU on glass and rare earth research	By Participants, Researchers, etc. (Chairperson Dr. C.K. Jayasankar)
11.45 AM to 12.15 PM	IT-5	Prof. A.S. Rao
12.15 PM to 12.45 PM	IT-7	Dr. R. Arun Kumar
12.45 PM to 1.15 PM	IT-8	Dr. P.K. Padhi
1.15 PM to 2.00 PM	Lunch	
1.00 PM to 3.15 PM	Poster-II (Dept. of Physics/Chemistry) PP-041 to PP-086. Please stick your poster on respective boards latest by 12.00 Noon.	
3.15 PM to 3.30 PM	Tea	
3.30 PM to 4.00 PM	IT-9	Prof. Y.C. Ratnakaram
4.00 PM to 4.30 PM	IT-10	Dr. K. Marimuthu
4.30 PM to 5.20 PM	Oral 6 to 10	
5.20 PM to 5.45 PM	Valedictory/prize distribution	

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56	PP-056	Sensitization effect of Nd^{3+} ions on Yb^{3+} /Nd^{3+} co-doped oxyfluoride glasses and their optical, fluorescence, and upconversion studies for visible laser and NIR amplifier applications.	B. Kiran Kumar, Megala Rajesh, P. Reddi Bubu and B. Deva Prasad Raju.
57	PP-057	Optical and spectroscopic investigations on Er^{3+} doped bismuth based phosphate glasses for optical amplifier applications	P. Reddi Babu, P. Pavithra and B. Deva Prasad Raju
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PP-056

Sensitization effect of Nd^{3+} ions on Yb^{3+} /Nd^{3+} co-doped oxyfluoride glasses and their optical, fluorescence, and upconversion studies for visible laser and NIR amplifier applications.

B. Kiran Kumar [1,2], Megala Rajesh[1], P. Reddi Bubu[1] and B. Deva Prasad Raju[1].

[1]Department of Physics, Sri Venkateswara University, Tirupati – 517 502, India.
[2]Department of Physics, Government Degree College, Rayachoty-516 269, India.

Abstract: The development of laser technology has put an intense demand on optical confinement materials with high performance are needed. Herein the authors have been investigated the Yb^{3+}- singly doped and Yb^{3+}/Nd^{3+}-codoped SiO2-based oxyfluoride glasses optical absorption, near- infrared (NIR), and up-conversion (UC) emissions including emission decay profiles in this work. Under 808 nm laser diode (LD) excitation, four NIR emission bands were observed *i.e.*, (Nd^{3+}: $^4F3/2 \rightarrow {}^4I9/2$, Yb^{3+}: $^2F5/2 \rightarrow {}^2F7/2$, Nd^{3+}: $^4F3/2 \rightarrow {}^4I11/2$, and Nd^{3+}: $^4F3/2 \rightarrow {}^4I13/2$) in co-doped glasses. NIR emission cross-sections [(σ_{emi} stimulated, (σ^M) from Mc-cumber theory] were calculated for $^2F5/2 \rightarrow {}^2F7/2$ (~1030 nm) transition of Yb^{3+} ion. σemi were found to be highest (26.27×10^{-21} cm^2) for Yb^{3+}: $^2F5/2 \rightarrow {}^2F7/2$ transition in N2 glass. UC emission spectra recorded by 980 nm LD shows bands cantered at 500, 536, 595 & 610, and 664 nm, attributed to $^4G9/2 \rightarrow {}^4I9/2$, $^4G7/2 \rightarrow {}^4I9/2$& $^4G7/2 \rightarrow {}^4I11/2$, $^4G5/2 \rightarrow {}^4I9/2$, and $^4G9/2 \rightarrow {}^4I13/2$ transitions respectively. Decay profiles were analyzed for Yb^{3+}: $^2F5/2 \rightarrow {}^2F7/2$ (~1030 nm) and Nd^{3+}: $^4F3/2 \rightarrow {}^4I11/2$ (~1057 nm) transitions upon 808 nm LD. . Energy transfer (ET) process from Nd^{3+} to Yb^{3+} have been observed in the present glasses system

Keywords: Oxyfluoride glasses; Nd^{3+} and Yb^{3+} ions; NIR fluorescence; Energy transfer; Gain cross-section; Upconversion.

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Best Paper Award

Is hereby awarded to B. Kiran Kumar,
Dept. of Physics, S.V. University, Tirupati.
for the Oral/Poster Paper presentation entitled: Sensitization effect of Nd^{3+} ions..
in STAR - 2022.

SEPTEMBER 22-23, 2022 TIRUPATI

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				23/9/2022

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Certificate

This is to certify that Bongani Kiran Kumar.

Lecturer in Physics. Govt. Degree College, Rayachoti.

has participated and presented the Paper entitled: Sensitization effect of Nd^{3+} ions on Yb^{3+}/Nd^{3+} co-doped oxyfluoride glasses and their optical, fluorescence, and ------- in STAR - 2022.

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