



Fr. Conceicao Rodrigues College Of Engineering
Bandstand, Bandra West



CATALYSE

Episode 1
GENESIS

2020
FRAGMAG

CATALYSE

THEME DESCRIPTION

Catalyse: Cause or Accelerate (a reaction) by acting as a catalyst.

Welcome to a mercurial world backed by the latest technological advancements. Today, the slow and steady cannot win the race, but the faster and smarter one can. Just as a Catalyst that speeds up a chemical reaction, we as individuals also need to catalyse ourselves to achieve all that we desire.

Catalyse your aim & level up your game. Catalyse your life's mission. Catalyse the most influential factor for success, that is, self-esteem and see the magic that you create for your very own self! Believing that you can do it and deserve it, will help you to conquer the world!

Fr. CRCE has been a focal point in the development of a student's personality. It has provided the students with an opportunity to have an all-round development. It has created a platform for the students to stimulate their talents/hobbies by participating in numerous activities apart from academics. CRCE has given all the students an excellent opportunity to catalyse them and to pass out not just as Engineers but future entrepreneurs & CEO's.

With the theme for this year's edition of FragMag, we wish to convey a message that whatever you do, do it to the best of your ability and act fast upon it because the opportunity once lost may not be yours soon. Time is not a factor; it's the only factor.

Your aim should not be to participate but to secure a podium finish. Catalyse yourself See the difference. Make it happen.



FR. VALERIAN D'SOUZA SFX

DIRECTOR

Dear Students,

I am extremely happy to pen down these few lines for this year's edition of FRAGMAG which provides an opportunity for our students to express their feelings in the form of articles, reports, poems etc. The Editorial Team of this year has chosen 'Catalyse' as the theme of FRAGMAG 2020.

Stephen R. Covey in his book *The 7 Habits of Highly Effective People* says, 'I am personally convinced that one person can be a change catalyst, a 'transformer' in any situation, any organization. Such an individual is yeast that can leaven an entire loaf. It requires vision, initiative, patience, respect, persistence, courage, and faith to be a transforming leader'.

CRCE offers a common platform for the students to make best use of the hidden talents and to hone their skills in various fields. It is an opening for everyone to be creative and innovative and to discover his or her own way forward. One has to be in learning mode all the time in order to taste success in life. This entails saying NO to the comfort zone. It is expected from everyone to maintain consistency to achieve the desired goals and objectives.

Dear Students in these uncertain times, Covid-19 has disrupted the life for everyone. However, as ironic as it may sound, every crisis is also the harbinger of opportunities. In the prevailing scenario, Technology has emerged as the biggest enabling tool to bridge distances and increase productivity. You have a great challenge before you to emerge victorious in all your endeavours. So accelerate and catalyse yourself to achieve your dream in near future.

Wishing you all the very best.

Fr. Valerian D'Souza SFX



DR. SRIJA UNNIKRISHNAN

PRINCIPAL

Annual Report 2019-20

Dr. Srija Unnikrishnan

Principal | Fr. Conceicao Rodrigues College of Engineering

Fr. Conceicao Rodrigues College of Engineering is dedicated to its vision of 'Moulding Engineers who can build the Nation', with focus on keeping up with the technology trends and holistic development of students.

Institute Rankings

- Extension of NBA accreditation for Computer Engineering, Electronics Engineering and Production Engineering programs till June 2023.
- Institute rankings in 2019 by reputed surveys-
 - Ranked 77th among the top private Engineering Institutes in the country by the Times Engineering Institute Ranking Survey.
 - Ranked 15th among the Private Engineering Institutions in the West Zone by the Week Engineering Institute Survey.
 - Ranked 5th among the Private Engineering Institutes of Maharashtra by Education World Higher Education Survey.

At the Academic Front

- New UG course in Mechanical Engineering with intake 60.
- Course in Electronics and Computer Science Engineering in place of Electronics Engineering.

- Merger of Information Technology course with Computer Engineering course.
- Final year pass percentages in the May 2019 University Examination:
 - Production Engineering – 95%
 - Electronics Engineering – 97%
 - Computer Engineering – 100%
 - Information Technology – 97%
- More than 95% students had CGPA scores above first class
- Major recruiting companies -TCS, Infosys, Amazon, Interactive Brokers, BNP Paribas, Quantiphi, CarWale, Godrej, ZS Associates, Oracle, Direct-I, L&T, Dolat Capital, NSE, Capgemini, Deloitte – to name some.
- Placement offers (as on 1st March 2020) – 142 out of 170 interested students.
- Two new foreign companies recruited our students this year- Human Resocia Pvt. Ltd. (Japan) and UBS (United Bank of Switzerland).
- Four third year students were selected for internship with UBS
- Many students and faculty have successfully completed NPTEL and other MOOC courses, most of them with Elite grade at the national level.
- The sixth edition of our biennial International Conference was held on December 20,21 2019. We received a conference grant from AICTE for the same. The conference proceedings will be published in the IEEE Explore Digital Library.
- AICTE grant for MODROB (Modernization and Removal of Obsolescence) and FDP (Faculty Development Programme)
- Prof.Ketaki Joshi, Dr. BhushanPatil and Prof Hithendra Vaishnav received a design patent for their product “Article for Image Acquisition and Measurement of surface and dimensional quality”.
- 9 faculties are recipients of Minor Research Grant from University of Mumbai.
- Our IIC (Institution Innovation Centre) was ranked 5th out of 159 colleges in the Western region. IIC conducted a number of Innovation and Entrepreneurship oriented events including the Innovation Day and Idea Competition.

Co-curricular and Extra-curricular activities

- Our regular academic curriculum is complemented by a variety of Co-curricular and Extra-curricular activities through the Student Council, Training and Placement cell, various student chapters, Departmental events and Alumni ‘Speak-up’ sessions.
- Some prominent events held were - National Level Inter-collegiate Fr. Conceicao Rodrigues Memorial Debate with the theme – Ideologies: Egocentrism Engendering self-abatement, Inter-collegiate Sports Festival “Athlos”, Industrial visits, Inter-collegiate Dance Competition’ Paridhan’, social activities through NSS, TEDx and Rotaract Chapters, Guest Lectures and Technical workshops in collaboration with Industry, placement trainings, hackathons and intra-class competitions
- New student chapter ‘Google Developers Club’, formed this year.
- Development of e-farm under e-yantra Farm Set up Initiative (eFSI)

- Mr. Vedant Sahai (TE Computer) was a member of the team that won the 5th position at the Singapore-India Hackathon, held at IIT Madras in September 2019. The team won the 'Prize of Encouragement' award for ideas with potential.
- Mr. Vikas Rai (BE Electronics) won a silver medal at the All Maharashtra Kickboxing Federation Competition in August 2019.
- Mr. Hrushikesh Kuwlekar (TE Electronics) secured an excellent position in Aeromodelling at the Maharashtra AIR SQNNCC in July 2019.
- In addition, our students are winners at many Inter-Collegiate Hackathons, debates and Sports events.

National and International Competitions

- 4 teams have qualified for the finals of Smart India Hackathon 2020.
- Team Abadha, fabricating All-Terrain Vehicle, secured All India Rank 5, out of 82 teams, at SAE BAJA 2020, held at Chandigarh.
- Team CRCE Formula Racing, secured an overall rank of 25 amongst 90 participating teams in the Formula Bharat 2020 held at the Kari Motor speedway, Coimbatore. They are getting ready to participate in the SAE Supra at the Buddh International circuit, Delhi.
- Team Vaayushastra, making UAV (Unmanned Aerial Vehicle) participated in SAE Aero Design (East) competition in the Advanced class category held at Texas, USA in March 2020. They were ranked 9th in the Design report and overall 10th globally.
- The Robocon team has qualified for the initial round of Robocon 2020. This year, the theme is to play rugby 7's game using two robots and five obstacles as five defending players.
- Team Mavericks developed a drone and participated in SUAS 2019- Student Unmanned Aerial system held in Maryland, USA in June 2019. They received the 'Just Joe Brannan Sportsmanship Award'. The team is targeting to improve their ranking in the 2020 competition.
- Mr. Noronha Alden Anil (TE Electronics) won gold medal in the 110m hurdles at the Khelo India Youth Games 2019 at Pune. He also won the gold medal at the All India Inter-University Athletics Championship in Jan 2020.
- Mr. Dhruvil Mataliya was selected to participate in the Asia Youth International Model United Nations at Putrajaya, Malaysia in August 2019.

Many of our students are recipients of Government and various Trust Scholarships. Additionally, 7 students are receiving scholarships from Bluestar foundation, 8 students from Stulz CHSPL foundation and 2 first year girl students from Katalyst India.

With a progressive mindset and continuous evolution, we hope to create new benchmarks in the field of engineering education.

FROM THE EDITOR'S DESK

"In the middle of difficulty lies, opportunity"

Humble Greetings to you on behalf of the Editorial Board of FragMag 2020.

Change today is inevitable? Therefore, Humans are catalysing! When we decided on the theme for FragMag this year, I believed strongly that this theme needed a little bit more of an insight than what we had already at that point. But then all of us came across an insight. The insight that caused the world to catalyse and imbibe change in everything around them. The insight of COVID-19 which has had an unprecedented impact across the globe. Between scientists catalysing the process towards a speedy discovery of an effective vaccine and governments across the globe burning the midnight oil to curb the spread of the deadly virus, we humans realized that everything Changes. And thus the World changed its motto. From Just Do It, to, Do It, Now!

In Chemistry, there's a negative and a positive catalyst. The former one helps to reduce the rate of the chemical reaction while the latter one accelerates the speed of a reaction. The COVID-19 pandemic has undoubtedly acted as a negative catalyst in terms of the global economic crisis. Still, it has in turn proved itself to be a positive catalyst to humans, imbibing in us a sense of responsibility & seriousness towards things we never considered severe. Who thought human health is more critical than investments and luxury? Who believed that social distancing in your humble abode would be the new vacation getaway? Our dearest Amchi Mumbai blessed us with a rare sight of dolphins swimming their heart out in the high seas. Who imagined one could even get to see dolphins in a bustling & chaotic city like Mumbai? Perhaps, the pandemic has given us that much-needed emergency break. Yes, ladies & gentlemen, it has taught us values that we could have never learnt or felt otherwise. It's said, "If you cannot learn the right way, learn the hard way". The current situation has imbibed in us a sense of taking things in life seriously. It has helped us to catalyse on our talents, skills and hobbies that were neglected due to a very common reason, "No Time". I see bakers, chefs, painters, poets, musicians and various other talents oozing out from individuals who never believed they could dawn a new skill to their credit during the lockdown.

Although the COVID-19 pandemic has created an adverse impact on humankind, it has brought in us a sense of understanding. "It might be stormy now, but the rain doesn't last forever". We're all stepping into a new normal, a normal that won't be like the one we were used to earlier. A new normal, where our priorities will change to things such as health, hygiene and the environment. A normal where mental health is considered seriously. If a pandemic like COVID-19 has the potential to wipe out the entire civilization, then, we humans too, have the potential to withstand anything and unite as one to fight the battle.

I take this opportunity to thank Reverend Father Peter D'Souza, Reverend Father Valerian D'Souza and our Principal Dr.Srija Unnikrishnan for bestowing upon me their prayers and blessings. I would also like to acknowledge with gratitude the support I have received from Dr. Deepak Bhoir (Dean of Students Affairs). This magazine wouldn't have been possible without the leadership and continuous encouragement I received from Dr. Ketaki Joshi, the Convener & In-charge of the Marathi section of this year's edition. A hearty thanks to Prof. Deepika Singh (Hindi In-charge) & Dr. Joseph Rodrigues (English In-charge). A big thank you to the entire team of FragMag (RichaTripathi, Varad Patil, Maria Anthony, Yohaán Mhatre, Gautam Manuel) for always helping me through this wonderful journey."

"Design is Intelligence made visible" The wonderful designs you will see in this Magazine have been done by none other than Jeswin Thomas. I thank you from the bottom of my heart, Jeswin for all your efforts in making this year's edition look attractive. How can I forget the entire Student's Council who came up with their initiative towards a unique idea of digitally publishing this year's edition. A Special thank you to our webmaster, Sakshi Ghadigaonkar and ex-Technical Secretary Ryan D'silva for making a dedicated website for FragMag!

Lastly, to this person, who's always worked in silence and behind the screen. Yes, I am talking about Kevin Ruffin, the General Secretary of the Students' Council and I consider myself as the luckiest Editorial Secretary because of the support I've always received from him. Thank you, Kevin for always having my back.

Today, to be in the privilege club doesn't mean owning a brand new car & having multiple investments but means being able to maintain social distancing. I call to mind the ones who are lesser 'privileged' than you & I, and I urge you to lend your helping hand in whatever way you can. Your kind help, love and support rendered would go a long way.

I am presenting to you the FragMag Edition of 2020! Wishing you all have an insightful experience.

Cheers to the New Normal!

Ruben Lobo
Editorial Secretary





ENGLISH EDITORS

Better to be a catalyst for change than a martyr for lies.

Everyone has an ability to change. Change what surrounds oneself and change what is inside oneself. But it is always the crossroads of the greater question that we always find ourselves at. Whether we change for good or for bad? For whom is this change good and for who is it not? The average citizen holds in his holster the power of this decision making. It ranges from a graduate looking for the decision in regards to the career to pursue, to the farmer who decides the fate of a nation by pressing a button during the elections. Everyone has the power to create change, for Good, for Bad, for the Past and for the Future. But do we exercise this right to change or has it just stayed out be an old fashioned notion?

Let us tell you a story. On the evening of December 1, 1955, Rosa Parks sat at the front of a bus in Alabama, heading home after a long day of work. During her journey, she was asked by a conductor to give up her seat to a white passenger. She refused and was arrested for disobeying an Alabama law requiring black people to relinquish seats to white people when the bus was full. Her arrest sparked a 381-day boycott of the Montgomery bus system. It also led to a 1956 Supreme Court decision banning segregation on public transportation. She always said that in the matter of a few seconds I had a decision to make. The decision of whether I want my kids and my eighty year old grandmother to live in a world where they have to oblige without consent, every single day and watch a white counterpart take away what is rightfully theirs. This thought that Rosa Parks had within those seconds, my friends is what we wish to define as a Catalyst.

Catalyst speeds up a chemical reaction and brings about change. But we believe that more than this, the point at which the catalyst enters the reaction that plays the pivotal role. It is at this point that we stand corrected with the understanding and conviction that the current circumstances are not what we wish for. The exact point which urges us to push towards change in the reaction. And exactly at this point is where we wish to Present Fragma 2020.

We the English Editors, hope that Fragma Edition 2020 urges you to move towards this change. It can be a small decision to start off with. But without doubt catalyse yourself towards that change. The road to success is a rough one with many twists and turns. But we hope that Fragma inspires you to become the Catalysts of the World, not only for yourselves but for the progress and welfare of all those around you. Although it has been a tough time considering the scenario of the world, we the English Editors, hope to inspire every individual under its digital roof, through the contributions that the students and teachers have displayed. The most important message from Team Fragma would be, grab every opportunity at hand and never stop believing in you; no matter what the world has to say. Catalyse yourself and see the difference you make, not only in your life but also of those around you!

Dr. Joseph Rodrigues
Maria Anthony

HINDI EDITORS

जीवन संघर्ष से भरा हुआ है। कोई कितना ही प्रयत्न क्यों न करे पर अपने संघर्षों से भाग नहीं सकता। जिंदगी अपनी गती से चलती रहती है और हम आगे बढ़ते रहते हैं। निरंतर आगे बढ़ने की प्रक्रिया में बहुत सारी चीज़ें, लोग और कई अनेक तत्त्व हमें चलते रहने के लिए प्रेरित करते हैं। इन उत्प्रेरणाओं का मोल अधिक होता है, इन्हीं के कारण हमारा हौसला कायम रहता है।

इस वर्ष की पत्रिका का विषय भी इन्हीं सिद्धांतों पर है - "Catalyse" अर्थात् उत्प्रेरित करना। कोई भी वह पहलू, छोटा हो या बड़ा जिसने आपको अपना जीवन आगे बढ़ाने की और स्वयं को एक आदर्श मनुष्य बनने की प्रेरणा दी है, उसे उत्प्रेरक कहते हैं।

इस पत्रिका में हिंदी साहित्य विभाग का सहयोग

साहित्य समाज का दर्पण है, साहित्य के बिना मनुष्य का जीवन अधूरा है। एक साहित्यकार समाज की वास्तविक तस्वीर को सदैव अपने साहित्य में उतारता रहा है। आदि-काल के वैदिक ग्रंथों व उपनिषदों से लेकर वर्तमान साहित्य ने मनुष्य जीवन को सदैव ही प्रभावित किया है। साहित्य ने मनुष्य की विचारधारा को एक नई दिशा प्रदान की है। मनुष्य की विचारधारा परिवर्तित करने के लिए साहित्य का आश्रय लेना पड़ता है। वैदिक काल से लेकर आज वर्तमान काल तक हिंदुस्तान में सबसे ज़्यादा प्रचलित हिंदी साहित्य है। इसने मानव जाति का परिवर्तन कुछ ऐसे किया, 'अ' - अन-पढ़ से शुरुवात कर 'ज्ञ' - ज्ञानी बनाया। साहित्य मनुष्य के जीवन का उल्लेखनीय उत्प्रेरक है। हिंदी केवल एक भाषा नहीं बल्कि भावों की अभिव्यक्ति है।

सौभाग्य हमारा कोटि जन्मों का, मिला हमें जो यह वरदान है हिंदी,
सवा सौ करोड़ भारतीयों का अखंडित स्वाभिमान है हिंदी।

अनजान लोगों के बीच मधुर व्यवहार है हिंदी, प्रेम पत्र के संभाषण का प्यार है हिंदी,
पीढ़ी पीढ़ी चलते आये घर घर का संस्कार हैं हिंदी
गली गली नगर नगर चौराहों का उत्सव त्यौहार हैं हिंदी।

सीमा पर खड़े वीर सैनिकों की आन है हिंदी,
परदेस में अपनों से अपनों की पहचान है हिंदी,
पंत, निराला, दिनकर, सुभद्रा का गुरुर है हिंदी
बच्चन की मधुशाला का हल्का हल्का सुरूर है हिंदी
तरह तरह के रस, अलंकार, छंदों से भरपूर है हिंदी।

साहित्य के नीले अम्बर में दैदीप्तमान का सूर है हिंदी,
माँ भारती के माथे की जगमगाती बिंदी,
भारत के जनमानस का अभिमान है हिंदी
सवा सौ करोड़ देशवासियों का अखण्डित स्वाभिमान है हिंदी ।।
सौभाग्य हमारा कोटि जन्मों का, मिला हमें जो यह वरदान है हिंदी।

अंग्रेज़ी बोलकर लोग पैसे कमाते हैं और हिंदी बोलकर सुकून।

आज भी हिंदुस्तान में चाहे किसी भाषा पर हमारी कितनी ही पकड़ क्यों न हो पर किसी की बात न समझ आने पर हमारे मुँह से यही निकलता है, " अबे! हिंदी में बोल यार "

प्राध्यापक दीपिका सिंह
त्रिपाठी ऋचा

MARATHI EDITORS

विज्ञानामधील रसायनशास्त्र हे निसर्गात सर्वत्र दिसते. रसायनशास्त्र अगदी मानवी शरीरापासून ते अंतराळात लागू होते. उत्प्रेरक (कॅटॅलीस्ट) ही रसायनशास्त्रातील एक संकल्पना - एखाद्या रासायनिक प्रक्रियेचा वेग वाढवणारा पदार्थ.

मानवी जीवनातही प्रत्येक टप्प्यावर अनेक उत्प्रेरके महत्वाची भूमिका बजावत असतात. ही उत्प्रेरके कधी एखादी व्यक्ती तर कधी एखादा प्रसंग म्हणून आयुष्याला नवीन कलाटणी देतात. प्रत्येक मानवाची आपल्या जीवनात काही ध्येयं असतात, ज्यांसाठी ती व्यक्ती अथक परिश्रम घेत असते. या प्रयत्नांना जोड मिळते ती या उत्प्रेरकांची. एखाद्या कलाकाराला त्याच्या एखाद्या दैवी कलाकृतीसाठी रसिकांची दाद मिळते, तेव्हा सर्वप्रथम तो कलाकार त्या प्रेरणेचे आभार मानतो ज्यामुळे तो या रसिकांच्या प्रेमाला पात्र होतो. जशी ही प्रेरणा अदृश्य स्वरूपात त्या दैवी निर्मितीच्या प्रक्रियेतील एक अविभाज्य घटक ठरते, तसेच आपल्याही आयुष्यातल्या प्रत्येक छोट्या - मोठ्या यशात अशी उत्प्रेरके यशाचा मार्ग सुकर करतात. या बाह्य घटकांबरोबरच आपले अंतर्गत गुण आणि मूल्य या यशाच्या घडणीत आवश्यक असतात, म्हणूनच तर म्हणतात की आपणच आपल्या जीवनाचे शिल्पकार असतो.

विद्यार्थी दशेत असताना विद्याभ्यास आणि ज्ञानग्रहण ह्या प्रक्रियेत 'गुरु' आणि 'पालक' हे खरे उत्प्रेरक असतात. गुरु आपल्याजवळील ज्ञान हातचे काहीही न राखता शिष्याला देतात आणि त्याच्या यशातच आपली गुरुदक्षिणा मानतात. पालक आपल्या पाल्याच्या यशात आपल्या जीवनाची इति कर्तव्यता मानतात. दोघांची अशी प्रामाणिक इच्छा असते की ह्या ज्ञानाचा उपयोग त्या विद्यार्थ्याने पुढे जीवनात सकारात्मक कार्यासाठी करावा. ही भावनाच त्याच्या जीवनात उत्प्रेरकाची भूमिका बजावते.

जीवनातील प्रत्येक टप्प्यावर केलेले प्रयत्न आणि त्यांना मिळणारे यश या प्रक्रियेतील खरे उत्प्रेरक ठरते, ती माणसाची 'जिज्ञासू वृत्ती' आणि 'उद्योगशीलता'.

एखादे कर्म व त्याचे फळ , मग ते आपल्या मनाप्रमाणे मिळो वा मनाविरुद्ध , पण त्या कर्मामागील 'मानवी क्रियाशीलता' आणि 'नाविन्याचा ध्यास' हीच खरी उत्प्रेरके.

कुठल्याही वळणावर मानवाची 'आदर्श मूल्ये' आणि 'तत्त्वे' या दोन उत्प्रेरकांचे अनन्य साधारण स्थान आहे. ही तत्त्वे आणि मूल्येच तर जीवनाला खरा अर्थ देतात आणि मानवाला सामान्यत्वाकडून असामान्यत्वाकडे जाण्याची उर्मी देतात आणि अशी आदर्श मूल्येच समाजाच्या आणि मानव जातीच्या कल्याणास कारक ठरतात.

डॉ. केतकी जोशी

वरद पाटील