

Janata Shikshan Mandal's

## **DEVCHAND COLLEGE**

ARJUNNAGAR 591 237 Dist. Kolhapur, Maharashtra, INDIA



# **INTERNAL QUALITY ASSURANCE CELL**

Criterion III
Research, Innovation and Extension



Institution has created an ecosystem for innovations including Incubation centre and other initiatives for creation and transfer of knowledge



#### **Department of Chemistry**

#### Facile synthesis of Drugs

Heterocyclic compounds are medicinally important compounds. However, their stepwise synthesis is a time consuming process. The single reaction by conventional method completes in more than 80 hours. Prof. Savita Desai, Department of Chemistry used microwaves as the source of energy. By this method, the reaction time has been reduced to less than 8 minutes. She has also followed the method of biological prediction studies by using the software PASS, with which the biological applications of the synthesized compounds are predicted before their actual testing. This method not only reduces the time lag between the synthesis of the compound and its use as a drug, but also increases the rate of success and reduces the expenses required for the screening of the compound. With this modified and improved technique, Prof. Desai and her research group has been successful in synthesizing various biologically active compounds such as anti microbial, anti-cancer, thrombin inhibitor and antitubercular etc. in the laboratory.

# कमी वेळात सोप्या पद्धतीने औषधनिर्मिती

#### डॉ. सविता धोंगडे-देसाई यांचे संशोधन: केवळ सात ते आठ मिनिटांत प्रक्रिया

#### आम्ही कोल्हाप्री

र्रोदर्भा नरबाही-पाटीळे मकाह क्लांक

alterests on he foliage stratitions. ofreezu.cz. क्षेत्रपायं सिर्मित WHELE अनेकवेद्धा औषप विश्वविद्यान ८० लागांहर अधिक कार प्रक्रिया करावी लाखे से प्रक्रिया बेळखाड संगय



डां. मविता

ऑक्फॉनॉमंत बाबत मशोधन योगडे-देमाई मायकोक्ट

पानं क्यों देखक

माच्या पद्धतीन

ओखनमा बाग करून त्यानी मारोधन केलेले प्रक्रिया केवट मान ने आउ विभिन्नत होने हो अधिकार याचा करते आहे. कमो बेळात होण्यामाठी न्यांनी नेनी बावर केरना आहे त्यांच्या वा विस्कारणे असने पानः पर्याप संशोधनामुळे क्षयांग, कर्काण, मोचन बोल्ह्यपुरन्या हो स्तीवनः स्वनान्या गुरुव्या होने या ५ इस

#### ३७ शोधनिबंध प्रकाशित

डी. धीगडे देमाई मध्या त्याच्या मार्गदर्शनावाली महा विद्याबी पीवन हो. करत आहेत. त्या दहा वर्षे शिवाओं विद्यापीगुरूका सिनंद सदस्य हात्या. त्याचे ५७ शोपनिवय जाताराष्ट्रीय जनत्वमध्य प्रकाशित झान आजतः ह शोधीनवध त्यानी आत्मराष्ट्रीय तसेच राष्ट्रीय परिषदात सादर कर आहेत

आसमध्य औषधीनीमीचो प्रक्रिया । प्रक्रम्य पूर्व केले आहेन लास्त्रेखन्थ

कंटेरिक्ट व आयोजिय विकियरचा - योगप्रमायाचन अमेरीसीन बांतिन पेप प्रातेल्या आनसाष्ट्रीय परिषदेन मुख्य व्यास्थात्या म्हणून आमधिन केले होते त्यानो विद्यामीत अनुदान आयोगाचे रोज

shrufatheture struct utauturum हा पोगह-देसाई पांची केलेल्या या ल्यांच्या व ल्यांच्या विद्यार्थ्याच्या मशोधनावर आधारत १४ आतरराष्ट्रीय प्रसंक त्रवर्ष अवस्था असेने च रामावित सम्बन्धाः प्रवासित करो आरेन हो चीमते देखते पुराचक

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प्राथमात्र । तारे न्याचे प्रशासन रिवासक रिवासाओं विस्त्राचीतानुव प्रथम animals renormed fraunc पर्व कार्न त्यानम त्या वक्का कोतंत्र, नियामी प्रथ प्रश्यापिका साम्बर सङ् प्राप्ता चेक्सो करत states and reper financial विद्याचेताने पोएच हो। मार्गदार्थक मार्ग्य मान्यमा विन्यासम् वेशकः मार्गिक्कान्यान त्याचे विभागो विश्वाणीं वान्यशासम् सर्गापन VARIABLES RAPER SOIL

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#### **Department of Physics**

#### Development of Physics Laboratory instruments by Waste Material

Department of Physics developed some simple practical instruments in the laboratory in low cost instead of purchasing costly readymade instruments from the market which are required for Practical course. Such activity inculcates innovative skills of designing and developing instruments among students.



Specific rotation of sugar solution by Polarimeter



Cardinal points by Searle's Goniometer



Surface tension of mercury by modified Fergusson's method



Surface tension of water by Jaeger's method



Surface tension of mercury by Quincke's method



Viscosity of water by Poiseuille's method



Carey-Foster key for calibration of bridge wire



Viscosity of oil by Searle's Viscometer



Poission's ratio of rubber tube



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#### Earth abundant and Environmental friendly solar cells - Research by Dr. K.V. Gurav

Indian Solar cell industry is based on Silicon Solar cells. However the current research trend is in CIGS based solar cells. The costly Indium (In) and toxic Selenium (Se) constrained the practical use of CIGS based solar cells. The eco-friendly, environmental benign version of CIGS is CZTS which comprises earth abundant materials like Cu and Zn. Dr. Gurav and group are working on low temperature chemical synthesis (electrodeposition) for CZTS absorber layers. CZTS can be replacement to traditional Si based solar technology in near future. They are also working in the field synthesis oxidation, nonomaterials for Urea supercapcitor and Sensors.

#### सर्वसामान्यांना परवडणाऱ्या सोलर सेलची निर्मिती

डॉ. गुरव यांच्या संशोधनाने पारंपरिक सोलर पर्याय

वंदिनी गोलाही-पाटोले :



कोल्हापुरच्या हो कियोग गुरूव योगी

कार्यसम्बद्धाः ही विकास गुरुष याना बत्त्रकारे हे सेव्यास्त्र सेव्यासम्बद्धाः मीर अवते निर्मितीको वकारणमारे आहे व्याख्या संशोधनाममुळे परिपरिक मोस्टर विरावका नामा वार्षीय सिकास्त्र आहेते हो, गृत्य मृळके कार्यास्त्रकारीक अवकोळके मानी प्रवासी दिखाला बेवार्यां कारिक, अञ्चीनामा येथं यान्त्रे देवबाद कारून, अनुसार प्रच परास्त्र शिवाजी विद्यापीडामुः भौतिकालाम्या या विश्वयात् एमएस्यो पूर्व केली. सेंगे स्ट्रक्यर हिंक ऑक्साईड: विविध्या अंड अस्टिकेस्य इन एक्सीजी सेंगर या विश्वयात लागेने पीएन जी. यंपादन

#### आन्ही कोल्हाप्री

कुळी चित्रान कोरियाणाल र्गांत्राला सृष्टिकारियोच्या निर्मित्रामा स्रोत्र सी ड्रंड री राम निर्माण्या स्रोत्र सी ड्रंड री राम निर्माण्या स्रोत्र सी ड्रंड री सी ड्रेड राम या विकासना स्रोते री राम या विकासना स्रोते स्रोत्याचित्राच्याच्या स्रोते स्रात्या सीच्या स्रोते सामित्र स्रात्या सीच्या स्रोते सामित्र

प्रत्यानकाः प्रस्तिः कृष्णि नामाः
प्रकार वाँ पूर्ण देवकाँदः
काँनेजगरन्य गतान्यकः प्रार्थनान्यकाँनेजगरन्य गतान्यकः प्रार्थनान्यकार्यान्यप्रार्थनान्यान्य गीनः विशेषार्था गीरकः
वी करण जातिन त्यांचे प्रकृष उन्प्रार्थनान्यन्य प्रसिद्ध ग्राप्ते अतिन, त्यांचा शिराको विधारमित्रके 2 कुळाहुक हा वो भी एक मार्टीक आणि वो वो वी नाम मार्टीक विधारमीतामीत संख्रीपन निर्देशका प्रा भी भी नीवाई स्वेत्र भार्यकाल कराने वो पूर्व भीता 2 कीरिया पेटेट विस्तरको भीता मार्टी ती बोद दी एक पोटी एकका सामान्य तास्मानात एकतीको दीन विधारमाद्री वास्म करून खोलीमीत एकपीजी संस्थी एकती होता आख्लास सामान्य तास्मानात होता होता अख्याना सामान्य तास्मानात होता अख्याना सामान्य तास्मानात होता आख्याना सामान्य

#### Magneto-electric Nanoparticles for Drug Delivery System-Research by Dr. C.M. Kanamadi

The Scientific community showing more interest in the practical use of magnetoelectric nanoparticles (MENps) in biomedicines instead of magnetic Magnetoelectric nanoparticles. nanoparticles can respond very quick to and electric magnetic Dr.C.M.Kanamadi is working on synthesis of magnetoelectric nanoparticles for drug delivery system. He is also working on the production of electricity by separating H+ and OH- ions of H<sub>2</sub>O by using porous ferrite target (Hydroelectric cell). If water is sprinkled on the surface of ferrite target, the separation of ions takes place and gathers on the surface of electrodes and produce potential difference. Without using any acid as electrolyte, production of electricity is possible by using hydroelectric cell.

# कर्करोगावरील उपचार होणार सुट

डॉ. कनमडी यांनी केमोथेरपीला दिला पर्याय; 'मॅग्नेटोइलेक्ट्रिक नॅनो पार्टिकल वर संशोधन

नंदर्भ संबादी - पारांचे दर्ग सहस संस्था राज्य 🚹 स्था समि रक्तस्थानक कोम हा ब्रेटनेर हे बंद केंद्र साई इंडेग्गच्य की स्टीन कर सन्द

क्षर राज उक्त चर्च । संतर्त क्ष क्षरबंब प्रेयन में हार्नोक हैं। को करिया की रहा हम होरेख का बन त्यां का की

३२ जोधनिबंध प्रसिद्ध से को इस्तिकोशिक्षिक्रेक्षाम् स्टेन्स स्य प्रतित प्रतिति व सर्वित संस्कृति विकारिका साल सा का है कर उन्हर्क तर क्षेत्रक बाद एका मृत्र सकी आहे. परंतनस्थाने के बिहार्थ केन हूं ने किए

र्रेट्यान क्रांस कर

अस्ति देश इस

के जोत तथा है के समार्थित का है का र्यायान जारा मान हो उत्तर क्षेत्र हेमला और साम क्षेत्र की मी बीस के इसके हैं का साम हो उत्तर कर कर कर है हैं नहीं हिन्दू को करना जो उसे हैं. बसवे की की की बी किया में स्वीतन स्वीतन के करना कर उसे जान समा म्प्रेसिंह में परेस नोह सेन केने होती सीका अप मेरेंड । पूर्व मेरें । पूर्व ने जा जा है से नाम स ता क्या ए तिराह में रहेक्पन वस क्या महिना जीवन स्रोतिक है क्या पूर्व सर्वति हैंद होता है र्शतपूर्वत है केटन को त्या और मेरेकिन केना क्रोलेंच केना व स्वयति होन्यहर्ग चाले हो

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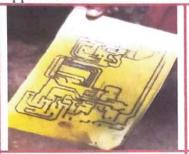
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#### **Department of Electronics**

#### Developing skills of making innovative electronic Kits in the laboratory

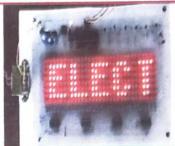
Department of Electronics developed innovative electronic circuits in the laboratory with the help of students. The kits have applications related to day- today life. This activity incubates innovative thoughts of students that reflects in terms of practical applications.



**PCB Designing** 



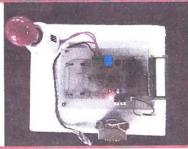
Automatic Irrigation System Using 8051 Microcontroller



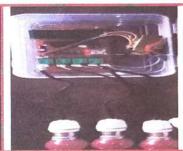
Bluetooth Controlled Smart Notice Board



Android Controlled Home Appliances Using Bluetooth Model



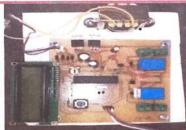
Speed Checker to Detect Rash Driving on Highway



GSM based Home Automation



RFID based Attendance System



Humidity and Temperature Measurement using Arduino



GSM based Bus Stop Alert for Passengers

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#### **Department of Zoology**

### Food and Water Supply Devices for Birds

Birds need water just as much as they need food. It is very difficult for birds to find water in the wild, especially in the summer season. Students of Department of Zoology prepared food and water supply devices for birds. These devices were lodged in the campus of our college.









YouTube Link:

#### Glass Fish Aquarium: Management and Maintenance by students

Students of Zoology studied management and maintenance of aquarium by constructing various Glass Fish Aquariums. This innovative idea enriched knowledge of students regarding different varieties of ornamental fishes and their maintenance to start their part time business.









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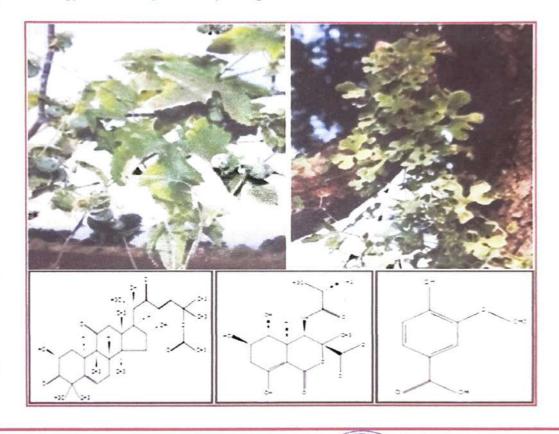
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#### **Department of Botany**

#### Development of Antidiabetic, Anticancer and Antimicrobial Drugs

Department of Botany has undertaken the projects on discovery of antidiabetic, anticancer and antimicrobial drugs from plants. *Blastania cerasiformis* and *Blastania garcinii* are the members of Cucurbits used in the research work. These two plants contain good amount of phytochemicals in relation with antidiabetic, anticancer and antimicrobial properties. The future research will focus on to develop extraction technology for therapeutically drugs.



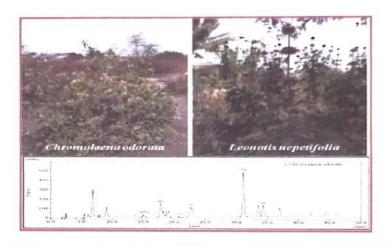
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## Department of Agrochemicals and Pest Management

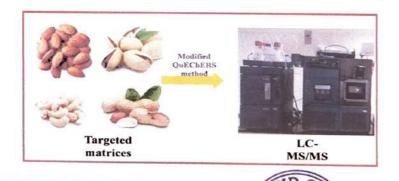
#### Screening of Plants for Insecticidal Compounds

Department of Agrochemicals and Pest Management has undertaken research work for discovery of novel insecticidal drugs from the plants. The members of family Asteraceae like *Chromolaena odorata* and *Leonotis nepetifolia* are used in the research work. Selected plants found rich for insecticidal compounds which can be used in future studies for the development of novel bio-pesticides.



#### **Development of New Method for Pesticidal Residue Analysis**

New LC-MS/MS method was developed for the detection of pesticide residue in Cereals, Pulses, Nuts and Processed Products. The developed method was published and accepted internationally.



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