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| Name | Dr. A. Seema  |
| Designation | Scientist D |
| Educational qualification | M.Sc, University of Calicut M.Tech, Cochin University of Science and Technology Ph.D, Cochin University of Science and Technology |
| Research area | <p>Electronic materials, components and devices Sensors and actuators Renewable energy materials Graphene Electronics Medical Electronics</p> <p>Technologies transferred for commercialization</p> <ul style="list-style-type: none"> ➤ The technology for thermal sensor based wearable device and an analysis system for the early detection and screening of breast cancer was transferred to MNC company M/s Murata Business Engineering India Private Limited, Hyderabad on 22.01.2019 ➤ Quickly Rechargeable Emergency Lamp to a startup company M/s. Aessar on 16.02.2018 ➤ The technology for NTC fast response thermal sensors was transferred to an Industry M/s. Deem Sensing Technology, Pvt. Ltd., Bengaluru in 2015 <p>Technologies ready for commercialization</p> <ul style="list-style-type: none"> ➤ 3D analysis system for wearable device for the prediction of tumour parameters ➤ Graphene Supercapacitors ➤ Graphene through chemical route ➤ Digital Thermometer ➤ Modified silica for space applications |
| Recognised Awards/Honors/Fellow | <ul style="list-style-type: none"> ➤ Awarded with Nari Shakti Puraskar, the highest Civilian honor for Women in India by Honourable President of India on 08.03.2019 ➤ Received “National Award for Women’s Development through Application of Science and Technology” constituted by Department of Science and Technology, Govt. of India on 28.02.2019 |

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| | <ul style="list-style-type: none"> ➤ Awarded with “OPPI recognition” by Organization of Pharmaceutical Producers of India for accessible medical device. The award was presented by ShriMansukhMandaviya, Hon'ble Minister of State of the Ministry of Shipping and Minister of State in the Ministry of Chemicals & Fertilizers ➤ The invention on wearable device for breast cancer screening was selected as one of the best ten innovations in Prime Minister’s award for Excellence in Public Administration- 2018 in the innovations category. ➤ Under BOYSCAST Fellowship (2007-2008) funded by DST, Govt of India, as visiting Scientist at Cornell University USA, |
| Projects | <p>(a) Ongoing projects</p> <ol style="list-style-type: none"> 1. Development of Nano NTC composition based sub millimeter sized thermal sensors for low temperature applications (TH/SP/061) (Sponsored by DST, Outlay: Rs. 50.5 lakhs, DoS: 15.03.2018, DoC: 14.03.2021 2. Development of supercapacitor bank for electronic time fuse application (TH/SP/062) (Sponsored by ARMREB, Outlay: Rs. 53.12 lakhs, DoS: 10.05.2018, DoC: 09.05.2021) 3. Development of Thermal Tomography for the Detection of breast cancer and to predict the Size and Location of the Cancerous Tissue (TH/SP/062) (Sponsored by MeitY, Outlay: Rs. 55.67 lakhs, DoS: 12.06.2018 DoC: 11.06.2020) 4. High capacitance (50F to 200F) graphene supercapacitors for storage of power from Renewable energy sources (TH/SP/062) Sponsored by CPRI (MoP), Outlay: Rs. 64.80 lakhs, DoS: 20.11.2018, DoC: 31.03.2020 5. Development of aerogel supercapacitor based power module (SCPM) for application in voter verifiable paper audit trail of EVM (TH/SP/065) (Sponsored by MeitY, Outlay: Rs. 660.35 lakhs, DoS: 25.10.2018 DoC: 24.10.2021) 6. Entrepreneurial Training Programme for Scheduled Caste Communities to produce Digital Thermometers” (TH/SP/070) Sponsored by MeitY, Outlay: Rs. 253.47 lakhs, DoS: 25.09.2019 DoC: 24. 09.2022 7. Entrepreneurial Training Programme for Scheduled Tribe Communities to produce Solar Lanterns/LED bulbs for Lighting Applications (TH/SP/071) Sponsored by MeitY, Outlay: Rs. 252.60 lakhs, DoS: 15.11.2019 DoC: 14.11.2022 <p>(b) Completed projects</p> <ol style="list-style-type: none"> 1. Development of Thermal Sensor Based Monitoring System |

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| | <p>for the Early Detection and Screening of Breast Cancer (TH/SP/051) Sponsored by MeitY, Outlay: Rs. 252.60 lakhs, DoS: 27.03.2014, DoC: 26.09.2017</p> <ol style="list-style-type: none"> 2. Development and Supply of 1500 numbers of non-calibrated thermal sensor probes (TH/TS/032) (Sponsored by Murata Business Engineering. Private Ltd., Outlay: Rs. 1.5 lakhs, DoS: 6.11.2019, DoC: 5.11.2019) 3. Development of graphene supercapacitors for power electronics, (TH/SP/050) (Sponsored by MeitY, Outlay: Rs. 252.60 lakhs, DoS: 13.09.2013 DoC: 12.09.2016) 4. Development of graphene based transparent electrodes for thin film acoustic actuators and sensors (TH/SP/047) (Sponsored by BRNS, Outlay: Rs. 22.74 lakhs, DoS: 01.04.2013 DoC: 31.03.2016) 5. Development of Graphene based Super capacitors for Energy Storage and Frequency Regulation in Smart Power Grids (TH/SP/043) Sponsored by CPRI (MoP), Outlay: Rs. 64.80 lakhs, DoS: 01.02.2012, DoC: 01.02.2014 6. Development of Light Triggered Graphene/Polymer Nanocomposite Actuators (TH/SP/039) sponsored by DST Outlay: Rs. 19.47 lakhs, DoS: 11.08.2010, DoC: 11.08.2013 7. Synthesis of nano NTC material and development of chip-in-glass Fast Response Thermal Sensors (TH/SP/027) Sponsored by MeitY, Outlay: Rs. 323.62 lakhs, DoS: 31.03.2008 DoC: 31.03.2013 8. Synthesis of cristobalite from silica precursors and study of its reinforcing properties in polysiloxane networks as relevant to space applications (TH/SP/012) sponsored by ISRO Outlay: Rs. 8.73 lakhs, DoS: 23.03.2005 DoC: 20.03.2007 9. Development of material composition and optimization of process conditions for chip thermistors equivalent to B 3977K (TH/SP/013) Sponsored by Namtech, Bangalore, Outlay: Rs. 10 lakhs, DoS: 25.07. DoC: 24.07.2007 10. Pilot Plant production of 300 Kg of phase pure Cristobalite for space applications (TH/TS/029) sponsored by ISRO Outlay: Rs. 61 lakhs, DoS: 20.02.2009 DoC: 28.03.2012 |
| <p>Publications/Patents (Past 5 years)</p> | <p>Patent</p> <ol style="list-style-type: none"> 1. “Method and system for predicting location and depth of abnormal tissue in breast of subject” Seema Ansari, M.N. Muralidharan, K. Arathy, Eva Ignatious, K. R. Ranjith, Deepak P.P, R.S. Sudheesh, B. Satheesan, US patent application 15/926,935, Date of Filing: 20/03/2018 2. “Method and system for predicting location and depth of abnormal tissue in breast of subject” Seema Ansari, M.N. Muralidharan, K. Arathy, Eva Ignatious, K. R. Ranjith, Deepak P.P, R.S. Sudheesh, B. Satheesan, Indian Patent Application No.: 201711047118, Date of filing 28th December, 2017. |

3. "Method and System for Classifying Health of Breast Tissues of a Subject" Seema Ansari, M.N. Muralidharan, K. R. Ranjith, Eva Ignatious, Hazeena Mohammed, Deepak P.P, K. Arathy, Anupama Parameswaran, Dr. Rominus Valsalam Samuel, Santha Lekshmi, Rakesh Gopinadh, JithinSurendrababu, Lekshmi Geethamani, Manju Blavelil Kunjappan and Binila Basheer Indian Patent Application No.: **201741017186**, Date of filing 16th May, 2017.
4. "Composition, Thermistor and methods thereof", Seema Ansari, Muralidharan Malamal Neelanchery, Sunny Erukulam Kochappan and Dayas Kalaparamban Rappai, Indian Patent Application No. 1343/DEL/2015 Date of filing: 13.05.2015.
5. "An Energy Storage Device and a System Thereof" Seema Ansari, Muralidharan MalamalNeelanchery, Suraj Subramanian, Mejo Akkaraparambil Johny, Dayas Kalaparamban Rappai Indian Patent Application No. 265/DEL/2015, Date of filing 29 January, 2015.
6. "Composition comprising reduced graphene oxide, supercapacitor and process of preparation thereof", Seema Ansari, Muralidharan Malamal Neelanchery, Divya Maniyara, Manikandan Padinhare Meleppat, Dayas Kalaparamban Rappai and Sunny Erukulam Kochappan, Indian Patent Application No. 293/CHE/2015. Date of filing: 20.01.2015.
7. "Graphene-Polymer Nanocomposites and Photomechanical Actuators With High Actuation Properties Thereof", Seema Ansari, Muralidharan MalamalNeelanchery, Rahima Cheerokkara, Sunny Erukulam Kochappan and Dayas Kalaparamban Rappai, Indian Patent Application No. 526/DEL/2013. Date of filing: 22.02.2013.

Book

1. Book Chapter entitled "Electronic Applications of Polyurethane and Its Composites" **by** Seema Ansari and M.N. Muralidharan in the book "Flexible and Stretchable Electronic Composites", Springer International Publishing Switzerland 2016
2. Book Chapter entitled "Electronics: Polymer–Graphene Composites" by Seema Ansari and M.N. Muralidharan in the book Encyclopaedia of Polymer Applications, Published by CRC Press Published in January 2, 2019

Journal Publications

1. High reliability thermistor probes for early detection of breast cancer using skin contact thermometry with thermal imaging, K. Arathy,

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| | <p>Seema Ansari, and K. A. Malini, <i>Mater. Express</i>, 10(2020)620–628.</p> <ol style="list-style-type: none">2. Self-Discharge and Voltage Recovery in Graphene Supercapacitors", Suraj Subramanian, Mejo Akkaraparambil Johny, Muralidharan Malamal Neelanchery, Seema Ansari, <i>IEEE Transactions on Power Electronics</i>, December 2018, 33(12), 10410-104183. Optimization studies on Nanocrystalline NTC thermistor compositions by a self propagated high temperature synthesis route, P.P. Deepak, Mariya Parokkaran, K.R. Ranjith, M.N. Muralidharan, Seema Ansari, <i>Ceramic International</i>, 44 (2018) 4360–43664. Optically triggered actuation in Chitosan/Reduced Graphene Oxide nanocomposites, M.N. Muralidharan, K.P. Shinu, A. Seema, <i>Carbohydrate Polymers</i>, 144 (2016) 115-121.5. Optical limiting properties of in situ reduced graphene oxide/polymer Nanocomposites, M.N. Muralidharan, S. Mathew, A. Seema, P. Radhakrishnan and Thomas Kurian, <i>Materials Chemistry and Physics</i> 171 (2016) 367-373. |
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