**Application Guide for 2020 Key Projects of Guangdong-Shenzhen Collaborative Fund**

**I. Application Requirements**

(I) The leading host application institution must a provincial fund host institution within Guangdong Province, and the key projects of Guangdong-Shenzhen Collaborative Fund must be led by the host institutions in Shenzhen or the host institutions in Shenzhen must participate in the cooperative application.

(II) The applicant should be a current employed and in-service staff of the host institution or staff employed by two organizations (at least one of the following certificates must be uploaded, including the certificate of employment at the supporting institution, employment contract, social security proof in recent three months and payment certificate of individual income tax).

(III) The applicant is the principle investigator in charge of the project and must have the doctorate or the associate senior job title and above. In addition, the applicant should have presided over national or provincial science and technology programs (including National Natural Science Foundation of China and Provincial Fund Projects) or city-level key research projects (the diploma or certificate of job title, project contract, assignment brief or conclusion reply letter must be uploaded on the system).

(IV) The applicant should meet the application requirements in the text of the Notification.

**II. Award Size and Implementation Period**

The project award size is **RMB 1,000,000/project**, and the implementation period is generally **3 years**. The project fund is appropriated at a time.

**III. Requirements for expected results**

(1) The ability of project team members to undertake national-level science and technology plans and funds in their disciplinary fields has been greatly enhanced to promote regional cooperation in science and technology in the Guangdong-Hong Kong-Macao Greater Bay Area.

(2) Achieve breakthroughs in the research of key scientific problems to support the development of key core technologies.

(2) At least two high-quality papers or patent results published in national science and technology journals with international impact, international top-level or important science and technology journals recognized by the industry, as well as papers presented at top-level academic conferences at home and abroad (referred to as "three types of high-quality papers") (to be acknowledged as supported by this provincial-municipal collaborative fund projects), or apply for at least two relevant invention patents. No less than one scientific and technical report shall be submitted.

(3) Encourage the formation of diversified research results in monograph publication, standards and norms, personnel training and application of results.

**IV. Supported Fields and Directions**

**Table 1: Application Guide and Direction List of Key Projects of Guangdong-Shenzhen Collaborative Fund**

| **Application code** | **Guide and direction** | **Remarks** |
| --- | --- | --- |
| **(I) Field of mathematical and physical science** | | |
| SZ0101 | 1. Study on Composite Materials Based on Polycrystalline and Glassy States (discipline code: A04) |  |
| SZ0102 | 2. Theory and Material Study of Topological State of Matter and Phase Transformation (discipline code: A04) |  |
| **(II) Field of chemical science** | | |
| SZ0201 | 1. Analysis on Recognition and Source of Emerging Disinfection By-Products and Precursors in Water of Main Drinking Water Source in Shenzhen (discipline code: B07) |  |
| SZ0202 | 2. Study on Catalytic Hydrogen Production Performance of New 3D Porous Nanometer Materials (discipline code: B03) |  |
| SZ0203 | 3. Study on Fast Field Detection of Ultra-Trace Chemicals Based on Surface Enhanced Raman Spectroscopy (discipline code: B05) |  |
| **(III) Field of life science** | | |
| SZ0301 | 1. Study on Efficacy of CAR/TCR-T in COVID-19 Treatment (discipline code: C08) |  |
| SZ0302 | 2. High-Quality Pan-Genomic Construction in Rice and Beneficial Allele Mining (discipline code: C13) |  |
| SZ0303 | 3. Response of Algae to Environmental Stress and Its Molecular Mechanism (discipline code: C07) |  |
| SZ0304 | 4. Study on Regulation of Immune Response by Radiotherapy (discipline code: C08) |  |
| SZ0305 | 5. Study on Molecular Mechanism of Macrophage Tumor Immunity Regulation by Targeted RNA Methylation (discipline code: C08) |  |
| SZ0306 | 6. Study on New Technology for Drug-Resistant Bacteria Prevention and Control (discipline code: C01) |  |
| SZ0307 | 7. Study on Virus Technology for Targeted Hematopoietic Stem Cells in Vivo (discipline code: C12) |  |
| SZ0308 | 8. Fundamental Research on New Multifunctional Biological Materials (discipline code: C05) |  |
| SZ0309 | 9. Study on Pathogenesis of Alzheimer's Disease Based on Humanized Model (discipline code: C09) |  |
| SZ0310 | 10. Study on Resistance Mechanism of African Swine Fever and Breeding for Disease Resistance (discipline code: C17) |  |
| **(IV) Field of earth science** | | |
| SZ0401 | 1. Marine Monitoring and Survey Technology (discipline code: D06) |  |
| SZ0402 | 2. Utilization of Marine Biological Resources (discipline code: D06) |  |
| **(V) Field of industrial materials** | | |
| SZ0501 | 1. Study on Regulation Mechanism of Degradation Rate of Natural Biological Materials (discipline code: E03) |  |
| SZ0502 | 2. Study on key Technology for Long-Term Stability of Spent Fuels Stored by Dry Method (discipline code: E06) |  |
| SZ0503 | 3. Study on Preparation of Efficient Photocatalyst by Atomic Layer Deposition Technology and Its Mechanism (discipline code: E02) |  |
| SZ0504 | 4. Study on Microstructure and Property Regulation of Key Materials for Nuclear Power Based on Additive Manufacturing Technology (discipline code: E01) |  |
| SZ0505 | 5. Study on Dynamic Evolution rules of Long-Term Performance of Track Structure in Guangdong-Hong Kong-Macao Greater Bay Area (discipline code: E08) |  |
| SZ0506 | 6. Study on High-Strength and High-Toughness Special Light Oxide Ceramics for 5G Communication (discipline code: E02) |  |
| SZ0507 | 7. Study on Reverse Design of Metamaterials with Reversible Neural Network (discipline code: E05) |  |
| SZ0508 | 8. Study on Preparation and Key Technology of N-Type Doped Diamond Semiconductor Monocrystal Materials (discipline code: E05) |  |
| SZ0509 | 9. Thermodynamic Mechanism and Technological Base of Seawater Desalination and Absorption of Offshore Thermal Pollution (discipline code: E06) |  |
| SZ0510 | 10. Study on Bionic Functional Coating of Interventional Device Interface and Its Tribology (discipline code: E05) |  |
| SZ0511 | 11. Research and Development of Key Technology for Shenzhen Waterlogging Characteristics, Mechanism Analysis and Real-Time Forecast Based on AI and High-Precision Hydro Meteorology Model (discipline code: E09) |  |
| SZ0512 | 12. Study on Key Technology of Structure-Sensor Integrated Intelligent Bionic Soft Manipulator (discipline code: E05) |  |
| **(VI) Field of information science** | | |
| SZ0601 | 1. Analysis on Performance Big Data of Kunpeng Processor and System Optimization Study (discipline code: F02) |  |
| SZ0602 | 2. New Generation of Narrow-Band and High-Performance Organic Light-Emitting Material and its Light-Emitting Device (discipline code: F05) |  |
| SZ0603 | 3. Study on Intelligent Assembly Method Based on Human Complex Skill Learning (discipline code: F03) |  |
| SZ0604 | 4. Study on NC-Fin FET Device with Ultra-Low Power Consumption and Ultra-Low Voltage and Circuit Design Technology (discipline code: F04) |  |
| SZ0605 | 5. Preparation and Mechanism of Optical Superstructure Surface Regulated by Optical Field (discipline code: F05) |  |
| SZ0606 | 6. Urban 3D Imaging and Disaster Monitoring Based on Satellite-Borne Sparse Microwave Image (discipline code: F01) |  |
| SZ0607 | 7. Preparation of Large-Area Flexible All-Solid-State Electrochromic Device under Normal Pressure and Temperature (discipline code: F05) |  |
| SZ0608 | 8. Coordinate Reconstruction Theory and Key Technology Research of General Processing Mode for Big Data (discipline code: F02) |  |
| SZ0609 | 9. Application of Biosensor Based on Van der Waals Heterojunction in Virus Detection (discipline code: F04) |  |
| SZ0610 | 10. Study on Anti-COVID-19 Herbs Based on Network Pharmacology (discipline code: F02) |  |
| SZ0611 | 11. Study on Key Technical Problems in STE-Based Quantitative Diagnosis and Treatment of Heart Failure and Clinical Application (discipline code: F01) |  |
| SZ0612 | 12. Study on Interpretable Deep Neural Network of Video Group Behavior Recognition (discipline code: F01) |  |
| SZ0613 | 13. Study on Threshold Value Transformation Mechanism of High-Speed Phase Change Memory (discipline code: F04) |  |
| SZ0614 | 14. Study on Ultra-Lightweight Shaped High-Efficiency Solar Battery Technology (discipline code: F04) |  |
| SZ0615 | 15. Study on Multi-Target 3D Vision Intelligent Detection and Guiding Technology Oriented to Multi-Robot Cooperation (discipline code: F03) |  |
| SZ0616 | 16. Study on Visual Servo of Mobile Manipulator under Unstructured Environment (discipline code: F03) |  |
| SZ0617 | 17. Study on Key Technology of Acoustic Event Detection in Complex Scene (discipline code: F01) |  |