1. Photomixer Postdoc Position

Principal Objective:
Develop narrowband optoelectronic devices for the detection of high-speed/mm-wave/terahertz modulated optical signals for single frequency generation. Fabrication of devices using microfabrication techniques including photolithography, e-beam lithography, plasma reactive ion etching, and metal deposition techniques. Integration of optoelectronic devices with optics and on-chip electronics.

General Duties and Responsibilities:
- Fabricate photomixer devices on III-V material systems by microfabrication techniques in NIST cleanroom facility.
- Characterize material and device properties using optical, electrical, and imaging techniques.
- Work as a team to integrate photomixers with frequency comb and on-wafer electronics.
- Provide technical input in formulating research solutions on problems which have been recognized as critical obstacles to progress or development in areas of exceptional interest.
- Studies will result in a series of publications, providing important changes to existing products, processes, techniques, or practices.
- Present technical results.

Knowledge, Skills, and Abilities:
- Experience with microfabrication techniques such as: photolithography, e-beam lithography, plasma reactive ion etching, physical vapor deposition of metals
- Experience with characterization techniques such as: SEM, TEM, XRD, AFM, Hall measurements, pump-probe or photoconductive decay measurements.
- Experience with lasers and optical components
- Ability to code with Matlab, python, or other object-oriented language

2. THz Electrical Design, Measurement, and Integration Postdoc Position

Principal Objective:
Perform and develop metrology for the measurement of high-speed/mm-wave/terahertz modulated optical signals, on-chip amplifiers to 1 THz, and filter manifolds. The candidate will use state-of-the-art on-chip design methods, measurement and integration techniques in the development of mixed optical/electrical circuits operating from DC to 1 THz. Measurements will include on-wafer scattering parameter measurements, and nonlinear electrical measurements.

General Duties and Responsibilities:
- Measure photomixers, and amplifiers on III-V material systems with on-wafer measurement techniques.
- Develop models on the linear and nonlinear behavior of photomixers and amplifiers.
- Characterize material and device properties using optical, electrical, and imaging techniques.
- Work as a team to integrate photomixers with frequency comb and on-wafer electronics.
- Provide technical input in formulating research solutions on problems which have been recognized as critical obstacles to progress or development in areas of exceptional interest.
Studies will result in a series of publications, providing important changes to existing products, processes, techniques, or practices.

Present technical results.

Knowledge, Skills, and Abilities:
- Experience with electrical measurement techniques such as: linear network analysis, four-probe, load-pull, and large signal network analysis.
- Experience with lasers, optical components, frequency generators, spectrum analyzers, and network analyzers.
- Ability to code with, or learn to code with: Matlab, Visual Basic, Lab View is required.
- Experience with microwave electronics simulation software (e.g. ADS) is desirable.
- Ability with mechanical and optical design, and fabrication is desirable.

3. Filter Design Postdoc Position

Principal Objective:
Develop narrowband filters for high-speed/mm-wave/terahertz electrical signals generated from optical signals. Fabrication of resonators and manifolds using microfabrication techniques including photolithography, e-beam lithography, plasma reactive ion etching, and metal deposition techniques. Integration of resonators devices with optics and on-chip electronics.

General Duties and Responsibilities:
- Fabricate resonators devices from novel material systems (UHR silicon, alumina, SrTiO3) by microfabrication techniques in NIST cleanroom facility.
- Characterize material and device properties using optical, electrical, and imaging techniques.
- Work as a team to integrate resonators with photomixers, frequency comb, and on-wafer electronics.
- Provide technical input in formulating research solutions on problems which have been recognized as critical obstacles to progress or development in areas of exceptional interest.
- Studies will result in a series of publications, providing important changes to existing products, processes, techniques, or practices.
- Present technical results.

Knowledge, Skills, and Abilities:
- Experience with microfabrication techniques such as: photolithography, e-beam lithography, plasma reactive ion etching, physical vapor deposition of metals.
- Experience with characterization techniques such as: SEM, TEM, XRD, AFM, Hall measurements, pump-probe or photoconductive decay measurements.
- Experience with lasers, optical components, linear network analysis, four-probe, load-pull, and large signal network analysis.
- Ability to code with Matlab, python, or other object-oriented language.

4. Fabrication and Measurement Postdoc Position

Principal Objective:
Fabricate narrowband optoelectronic devices for the detection of high-speed/mm-wave/terahertz modulated optical signals. Fabrication of devices using microfabrication techniques including...
Photolithography, e-beam lithography, plasma reactive ion etching, and metal deposition techniques. Integration of optoelectronic devices with optics and on-chip electronics.

General Duties and Responsibilities:
- Fabricate photomixer devices, resonators, transmission lines on III-V material systems with microfabrication techniques in NIST cleanroom facility.
- Characterize material and device properties using optical, electrical, and imaging techniques.
- Work as a team to integrate amplifiers, resonators, and photomixers with frequency comb and on-wafer electronics.
- Provide technical input in formulating research solutions on problems which have been recognized as critical obstacles to progress or development in areas of exceptional interest.
- Studies will result in a series of publications, providing important changes to existing products, processes, techniques, or practices.
- Present technical results.

Knowledge, Skills,
- Experience with microfabrication techniques such as: photolithography, e-beam lithography, plasma reactive ion etching, physical vapor deposition of metals
- Experience with characterization techniques such as: SEM, TEM, XRD, AFM, Hall measurements, pump-probe or photoconductive decay measurements.
- Experience with lasers, optical components, network analyzers, and electrical measurement tools
- Ability to code with Matlab, python, or other object-oriented language

For any further inquiry please contact:
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