

Dear Fellow Scientists and Engineers:

I'm quite pleased to have opportunities to offer which are on the very cutting-edge of both the biotech and manufacturing fields presently, as well as microfluidics and exciting nanomaterials physics research.

(1) Senior Microfluidics Engineer (Engineer IV)

My repeat-client in Pleasanton leads the market with its droplet digital PCR platform. You will be part of a multidisciplinary R&D team revolutionizing biological research and healthcare by developing new products in their droplet microfluidics portfolio. You will work with engineers, chemists, and molecular biologists to develop integrated chemical and fluidic systems for reactions in emulsions. This work will span from the research stage through product launch.

The successful candidate will:

Invent and prototype techniques for droplet generation, transport, detection, and manipulation
Design multiphase microfluidic circuits, and work with external vendors and internal capabilities on fabrication

Develop test approaches and instrumentation to characterize microfluidic performance

Design and build fluidics systems using commercial and custom equipment

Write software scripts for laboratory data acquisition and control

Run chemistry and molecular biology experiments in commercial laboratory instrumentation and new prototypes

Analyze data from sensors and imaging systems

Help roll these developments into products that change the way biology is done!

Required Skills:

Demonstrated expertise in laminar and liquid/liquid fluid flows

Hands-on working knowledge of microfluidics and automated fluidics instrumentation

Experience in MEMS and/ or microfluidics fabrication

Proficient in programming in Python, MATLAB, R, or C++

Capable of developing and executing experimental protocols, and communicating findings clearly and concisely

Ability to thrive in a multidisciplinary team setting collaborating with senior and junior scientists and engineers

Demonstrated innovation and initiative in dealing with technical challenges and assignments

Strong focus on results and achieving goals

Ability to identify internal customers and use their needs and perspectives in driving decisions and activities

Flexible and adaptive to a rapidly changing environment

Strong oral and written communication skills

Desired:

Experience with emulsions

Skill in generating, manipulating, and characterizing droplets

Significant experience in COMSOL or other numerical modeling

Computer-aided design and detailing using SolidWorks or similar package

Experience in image processing
Handson knowledge of molecular biology buffers and reagents

Required Experience:

PhD (or Master of Science degree with extensive experience) in Mechanical Engineering, Chemical Engineering, Physics, or an equivalent field

Desired:

Experience with droplet technologies
Industrial R&D experience with emulsions or other colloids
Experience in life sciences industry

(2) My repeat client for fifteen years has been on the cover of Scientific American and won multiple awards for "best place to work", as well as for brilliant and innovative technology. They are a small venture-capital funded start up company focused on developing a radical new type of computer memory which will allow "instant on-off" capability on all computers. They have an extensive intellectual property portfolio with over 200 United States patent applications – 175 are granted covering all aspects of the purification, formulation and electronic device integration of carbon nanomaterials.

They offer the chance to work in a leading technical environment on some of the most cutting-edge technology in the world; as well as excellent benefits, relocation assistance, stock options, and competitive compensation.

(3) My brand new client is an exciting early-stage startup spun out of a biotech and life-sciences incubator in New York City. Founded just one year ago, they have already achieved recognition and funding to bring on-board more key people and are specifically looking for both (1) a materials scientist with expertise in rheology and elution properties of printable hydrogels and (2) a 3D-printing mechanical design engineer with CAD background to design a new 3D-printing process.

The product being developed is an implantable drug-delivery system for artificial hips and knees with anti-fouling properties in the material to maintain a sterile surface. As many as 4% of all artificial joint implant patients develop infections as a post-operative complication. With nearly a million such surgeries performed each year.

In the USA alone, 40,000 possible infected patients make a serious impact, costing healthcare over \$1B annually. Alleviation of this problem is the goal addressed by this new drug-implanted hydrogel, which has been validated by leading surgeons in the field of orthopedics

The position will be based in New York, New York and relocation assistance is definitely available. The company is still pre-A round of Venture Capitalization but has a seed-round of funding in excess of \$1 million from private investors. Stock options will be included as part of the offer, as well as industry-competitive salary, benefits, etc.

Requirements are as follows:

Material Scientist (Rheology): Looking for someone with 5 to 10+ years of experience; educational background has Master's or preferably a P.h.D. in Material Science, but flexible. Highest priority will be given to those with industry experience (hands-on commercial experience). The product is a 3D printed hydrogel for antifouling coatings of artificial implant; the product will additionally be imprinted with active-agents that elute over time to fight existing infections. Familiarity with continuous liquid interface production (CLIP) printing methods are a plus. Knowledge of hydrogels and drug-releasing properties of hydrogels will be critical. Any prior experience with medical devices would be a plus, as well.

Key material science duties required by the position include, but are not limited to:

- Development lead for product physical and technical requirements. Some examples of which are:

Physical Requirements:

- durability
- shear properties
- stiffness
- thickness
- elasticity
- swelling capacity
- porosity
- Stimuli-responsiveness
- Rheological properties

Technical Requirements

- Proper implant fit
- Drug elution properties
- Drug loading capacity
- Sterility
- Print resolution
- Product printing duration

- Key tasks - Designing the rheological aspects of an ink/resin for an extruding-based system.
- Ideal candidates - PhDs that have worked with bioprinting methods (i.e. 3D printing cells into hydrogels).
- Manage research projects and prepare and/or approve all final reports related to print quality and product
- Manage laboratory hires and policies
- Direct the purchases of laboratory equipment
- Author and review technical reports and patent applications
- Plan, conduct, and interpret experiments and experimental data
- Collaborate to develop methods and procedures for clinical trials
- Understand and interpret U.S and regulatory guidelines as it pertains to relevant applications
- Develop and assess the printing quality, printed product, and product requirements as

identified by end-users

- Analyze and interpret the physical requirements of hydrogels
- Present technical data at research and industry meetings and to company share/stakeholders

Applicants must meet the following criteria, though exception can be made for exceptional individuals:

- Be well versed in the current chemical literature as it pertains to the applications, printing methods, and properties of additive manufacturing
- Possess strong communication and presentation skills
- Be creative, flexible, and independent thinkers that can perform optimally in environments of high stress and uncertainty
- Work well in small, cross-functional teams

Ideal candidates would also meet the following:

- Have a working knowledge of the IP landscape in the fields of 3D printing methods, materials, applications, and key competitors
- Be experienced in patent writing and drafting
- Have 5-10 years experience in industry
- Possess knowledge of U.S and European regulatory practices and GLP policies
- Have some knowledge of process engineering methods as it relates to chemical engineering

and

(4) Senior Device-Physicist for QD-based Solid State Displays

Another of my clients (different from above) is a high-energy start-up company in beautiful and sunny Gainesville, Florida with ties to the University of Florida. They are the world leader in developing next-generation display and lighting technologies, based on semiconductor quantum dots and other proprietary nanomaterials, called quantum dot light emitting diodes (QLEDs). Their technology is sought after by major display manufacturers world-wide and poised to become the dominant method for producing vivid colors with the low power consumption in mobile phones, flexible and transparent televisions and many other display and lighting technologies.

Job Description

The Senior QLED Device Physicist will be responsible for the fabrication of proprietary quantum dot-based light-emitting diode (QLED) test structures for next-generation display and lighting technology. He/she will work with other Research Engineers and Chief Scientist to develop a complete understanding of QLED failure modes and numerous novel physics phenomena occurring inside the device stack including charge build-up, charge balance, and spectral shifting. The well-qualified candidate will have a solid background in semiconductor materials science and physics, chemical safety and hygiene, team-oriented experimentation, vacuum technology, and technical presentation and writing. A successful Senior Device Physicist must be willing to work

in a high impact, fast-paced research environment with extended hours as necessary to make an impact on the world.

Primary duties

Key Responsibilities:

- Hypothesize and test new physics phenomena in the QLED device stack, analyze the results in great detail, and iterate on the experiments to develop a full physical understanding of advanced device phenomena including charge build-up, charge balance, device and QD failure modes, color shifts, and encapsulation
- Leverage knowledge in OLEDs and/or QLEDs and/or OPV to generate experiments and develop physical intuition.
- Make recommendations concerning the development, documentation and performance of production processes.
- Maintain a safe and clean working environment
- Perform other duties as required
- Work overtime as needed

Job Requirements:

Educational: Ph.D. in Physics, Materials Science/Engineering, Electrical Engineering, or closely related field.

Required Knowledge and Skills:

- 3-5+ years of hands-on OLED or QLED device physics research experience, including spincoating, thermal evaporation, sputtering, LJV, lifetime testing, other optical and electronic testing, failure mode analysis, surface and interface analysis.
- Proven track-record of developing new optoelectronic measurement techniques and/or applying current techniques to new classes of problems where there is little or no information available in the literature.
- Material analysis techniques (AFM, Profilometry, UV-Vis, Photoluminescence, TEM, SEM, XPS/UPS)
- Quantum dot physics and chemistry knowledge
- Independently formulates work plans, good written and oral communication skills, highly organized
- Detail oriented, sense of striving for a higher value, and performs well under pressure

Desired Knowledge and Skills:

- Advanced device physics and materials analysis characterization techniques is an advantage
- Software: LabVIEW, MATLAB, Origin

If you are interested in any of these excellent opportunities, please contact me with a resume and cover letter explaining which position is best for you and why. I always accepts resumes, but am especially interested in finding good strong matches, as well as any referrals and recommendations that you may have to offer.

Best Regards,

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