Background

People, especially younger generations, are gravitating towards artificial nails and nail art. Bright nail colors enhance personal style, boost confidence, and add a touch of creativity to daily life. Artificial nails in particular allow consumers to complete a manicure with complex nail art in under 20 minutes at home and at a lower price point compared to traditional methods, such as a salon gel. Press-on nails have a wide range of effects and finishes such as holographic, chrome, cat eye, color changing, etc. Artificial nails could go even further by encapsulating a variety of materials, including wearable electronics such as LEDs (light emitting diodes). Advances in battery and LED technologies, like those enabling electronic cigarettes to achieve extended charge lifetimes of up to a month, could be adapted to support these innovative applications.

What we're looking for

We are looking for cost-effective, ultra-small technologies that can generate light in innovative artificial nail designs. Solutions should prioritize minimal size (around 0.5 to 3 mm or delicate strings) and aesthetics, avoiding bulkiness. We welcome ideas leveraging LEDs, electroluminescence, chemiluminescence, or other innovative approaches. We are open to collaborating with experts in materials science, polymer chemistry, or biomedical engineering to develop commercially viable solutions.

Solutions of interest include:

- Micro LEDs for small points of light
- Electroluminescent films for even illumination
- Fiber optic strands with integrated light sources
- Chemiluminescent materials for chemical-based illumination

Our must-have requirements are:

- Lifespan of at least one week, ideally up to three weeks
- Comfortable, lightweight, and flat lights for elegant designs
- Can be incorporated into wearable artificial nails
- Compatible with artificial nail materials such as ABS (acrylonitrile butadiene styrene) plastic

Our nice-to-have's are:

- Rechargeable product that can be removed, recharged, and reapplied
- Finished products with pre-incorporated light sources creating designs that are bright, colorful and fun
- Withstands heat during the nail curing process (200°C)
- Multi-color light options

What's out of scope:

- Solutions using hazardous substances or harsh chemicals harmful to nails or skin

Acceptable technology readiness levels (TRL): Levels 5-9

1. Basic principles observed
2. Concept development
3. Experimental proof of concept
4. Validated in lab conditions
5. Validated in relevant environment
6. Demonstrated in relevant environment
7. Regulatory approval
8. Product in production
9. Product in market

What we can offer you

Eligible partnership models:

Sponsored research
Material transfer
Co-development
Supply/purchase

Benefits:

Sponsored Research

Funding is proposal-dependent starting with proof-of-concept.

Expertise

Partners will have access to industry experts in chemistry and toxicology, depending on the stage of the project.

Tools and Technologies

Partners will receive guidance on industry best practices and techniques.

Please contact the University of South Florida Technology Transfer office representative for submission – Karla Schramm at kschramm@usf.edu