Background

UV gel nail polishes have revolutionized the beauty industry by offering a long-lasting and durable alternative to traditional nail polishes. These gels provide chip-free wear for weeks, maintaining a high-gloss finish and vibrant color that resists fading over time. Some UV gel formulations contain compounds such as hydroquinone (HQ) and 4-methoxyphenol (MeHQ) to prevent premature curing. However, these stabilizers are heavily regulated in the EU and permitted only for professional use.

As many gel products are now entering consumer spaces, these restrictions present a significant barrier to market accessibility. In addition to that, there are concerns due to their potential toxicity and allergenic properties. These challenges underscore the need for safe, HQ- and MeHQ-free UV gel formulations that meet the requirements of both professional and consumer markets, offering effective performance while ensuring accessibility and safety.

What we're looking for

We are looking for HQ- and MeHQ-free UV nail gels that provide a durable 3+ weeks of wear and can be removed via a 10-minute soak-off process. While ideal partners would be able to supply the resin and the final formulation containing it, we are also interested in research that explores UV gel formulations free of the aforementioned compounds, ensuring safety for application on nails.

Solutions of interest include:

- UV gel formulations with safe stabilizers
- Polymer matrices incorporating non-toxic photo-initiators
- Hybrid UV-LED curing systems with stabilizer-free gels
- UV gel containing stabilizer alternatives using food-grade preservatives
- Water-based UV gel formulations with zero-detection stabilizers
- Formulations containing synthetic peptides or amino acid-based stabilizers

Our must-have requirements are:

- Free of detectable levels of HQ or MeHQ (below 10 ppm, preferably 0 ppm, verified via HPLC)
- Maintains wear resistance and appearance for at least 3 weeks
- Allows removal within 10 minutes using standard soak-off procedures
- Potential to meet regulatory standards for safety and cosmetic compliance in the US, Canada, EU/UK, and Japan

Our nice-to-have's are:

- Compliant in the US, Canada, EU/UK and Japan

What's out of scope:

- Stabilizers with evidence of endocrine disruption or high carcinogenic risk

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:

Material transfer

Benefits:

Expertise

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