Books & arts

Supplementary information to:

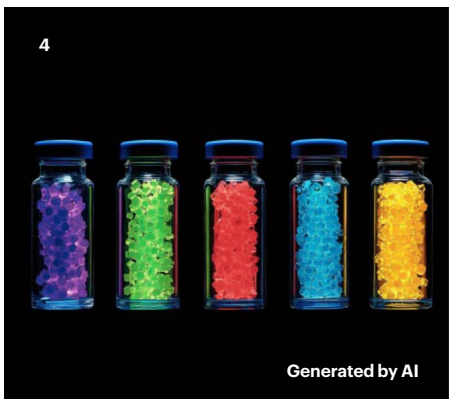
Will AI jeopardize science photography?

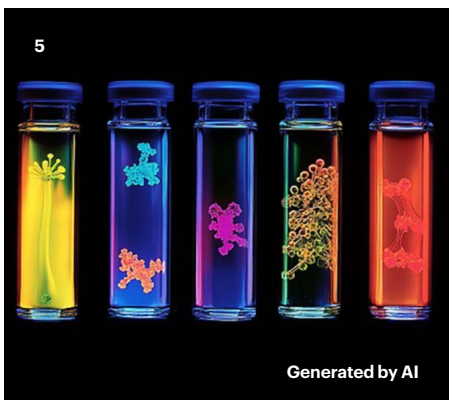
An Essay published in *Nature* **638**, 881–883 (2025)
https://doi.org/10.1038/d41586-025-00532-2

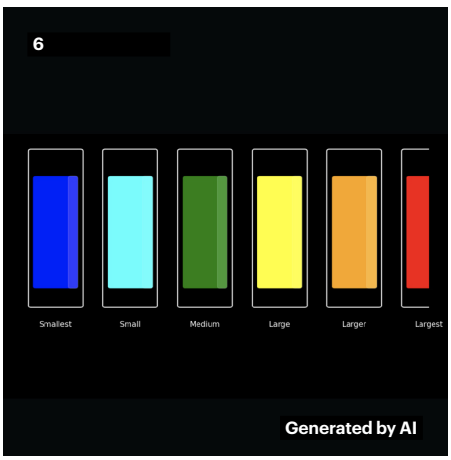
Felice Frankel

Further genAI tests:

It was an eye-opener to further create more AI-generated images, using MidJourney and Dall-e, with help from Gael McGill. The first round of generated images is included in the main body of text. Here, I decided to include my "real" photograph as a reference, along with the same prompt as before for the next go-round: "create a photo of Moungi Bawendi's nanocrystals in vials against a black background, fluorescing at different wavelengths, depending on their size, when excited with UV light."







With all three, the "black background" in the prompt was taken literally without adding a black surface with reflections. In this regard, they are closer to the original photograph, but the similarities end there. Images 4 and 5 are limited to only five vials and now include crystal-like formations—perhaps an attempt to interpret the term "nanocrystals." Image 6 outputted an incomplete juvenile illustration with the attached text: "Here is the enhanced illustration with added realism: each vial has a glass-like outline with a white highlight to simulate reflections, making the vials appear more three-dimensional. The colored liquid inside each vial represent different nanocrystal sized shifiting from blue to red. Let me know if you need any further refinements of additional labels."

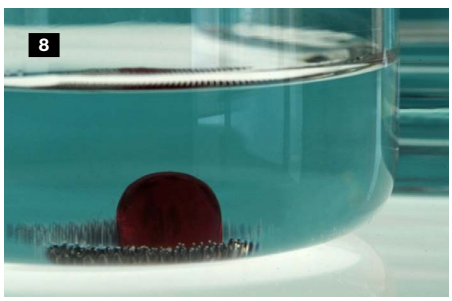
I also decided to try DeepSeek, with all the attention it has been getting suggesting that it will have a profound effect on the present Silicon Valley models. Here is the image from DeepSeek which uses an AI image generator named Janus-Pro.

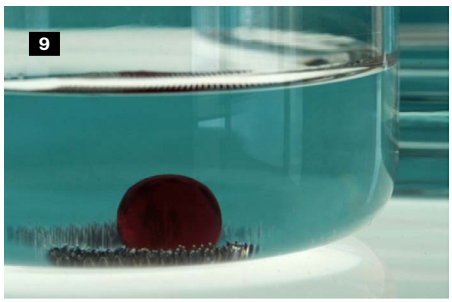
See what you think for 7.



Visual ethics matter

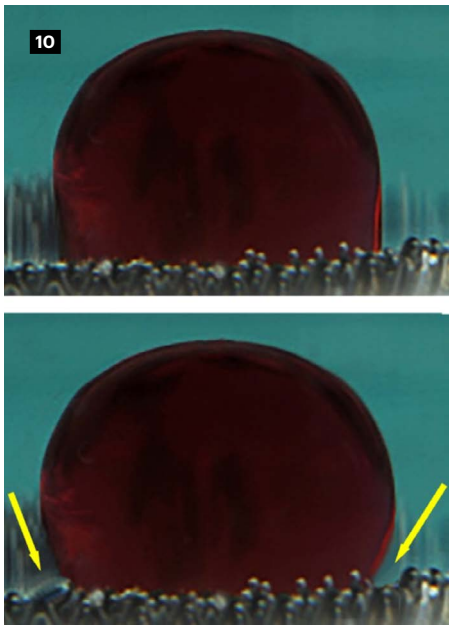
Below is an image (8) I made showing the hydrophobicity of the metallic material's surface, which causes the shape of the red colored material to turn into a ball. The second image (9) was altered, without my permission, by the





researcher to exaggerate the ball-like shape of the material.

If we zoom in on the images (10), it's clear that in the altered image (below) the ball was re-formed to look rounder (which artificially depicts a more hydrophobic surface-the point of the research.) While it is true that software would have picked up the alteration, a serious problem remains: this researcher clearly did not understand that altering the image is the same as altering the data. A trained scientist would never find it acceptable to alter their dataset arbitrarily, but that is exactly what happened in this case.



I didn't permit the lab to use the altered image. The researchers argued that the image could be used to illustrate the concept, but I disagreed. Even if the researcher informed the viewer that the image had been altered to "better" explain the science, a photograph appearing in a journal is generally considered to be documentary in nature. An image that has been manipulated to change the way the science appears has no place in a scientific publication.

"Is there still a place for a science photographer"

ChatGPT's response to the topic of this article, is remarkably thorough and, surprisingly – or unsurprisingly, I guess – supports the argument that we need ethical standards and an understanding of the difference between illustration and documentary images. Here is its edited version.

"A science photographer who documents scientific subjects plays a unique role in the world of AI-generated images, providing expertise, authenticity, and a critical perspective that is especially relevant in fields where accuracy and representation matter. Here are some key roles they can fulfill:

1. Expertise in Authentic Representation: Science photographers possess a deep understanding of their subjects, whether it's microbiology, astrophysics, or geology. This expertise helps ensure that AI-generated images intended for scientific representation are accurate and respectful of the data.

2. Curators and Contributors of High-Quality Datasets: Science photographers can contribute their work to datasets that train AI models, especially when images of rare phenomena or complex scientific subjects are needed. By curating datasets, they help ensure that AI learns from images that are not only visually compelling but scientifically accurate.

3. Ensuring Ethical Standards: In scientific communication, ethical accuracy is paramount, and AI image generation can blur lines if not guided carefully. Science photographers can advocate for ethical standards in how AI is used to represent scientific images, ensuring transparency about when AI has altered an image or created a visualization from data.

4. Innovation in Visualization Techniques: Science photographers can also collaborate with AI researchers to push the boundaries of how we visualize scientific data. For instance, they could help develop AI tools that analyze large datasets of visual information or produce simulations based on real-world photographs.

In short, science photographers remain crucial in the AI era, guiding responsible practices, providing high-quality input data, and ensuring that AI-generated images serve to inform and educate rather than mislead. They act as both guardians of authenticity and pioneers of new visual frontiers in scientific imagery."