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Sight for sore eyes

I am a chemist working in an engineering environment. I recently saw something through an optical microscope that I did not expect to see. In fact, it sent my heart racing. Molecules of hyaluronan, a biomacromolecule, appeared to self-assemble before my very eyes. I repeated the experiment several times and found that the results were reproducible. The highly ordered and crystalline structures showed a periodicity and a long-range order that I never thought was possible.

As a good scientist, I captured all these images and searched for a scientific answer. It appears that the light source from the optical microscope causes mixed oligomers of hyaluronan to self-assemble spontaneously. Perhaps the light sources removed water from the hydrated oligomers and caused them to crystallize into incredible structures that already existed in solution. I am not sure about all the details, but I thought I would let the readers get a peek at the diversity of the spontaneous structures I found.

The crystalline matrices seen in these images certainly open the mind to a number of possibilities. Hyaluronan, a versatile biopolymer and chief architect of the extracellular matrix and the human eye vitreous, never ceases to amaze me. Its properties outside of human tissue have far-reaching implications for biomaterials research. I envision the first biocompatible integrated programmable device. I suspect this technology will blossom, and I recommend that such devices resulting from this technology be called Nano-BITS, for Nanoscale Biocompatible Information Transfer Systems.

I can't wait to tell more.

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