

Influence of music on crystal growth

The last couple of years there is a lot of news about the influence of music on almost every possible subject: plant growth, unborn babies, study results of high school pupils and the milk production of cows that listen to Mozart. We asked ourselves if there would be any chance that music might also influence a “not living” material, such as a crystal.

Based on the book “the message of water” by Masaru Emoto we started a research to see if salt crystals exposed to music would grow any different from those that had not been exposed to music. We chose to work with alum: aluminium potassium sulphate $\text{AlK}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$.

From Bach to Clannad

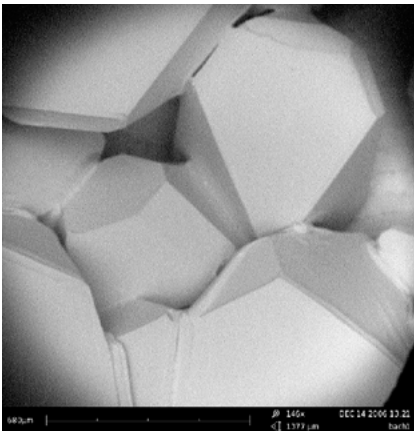
We made crystals under the same circumstances, exposed them to music and stored them where there would be as less exertion from other influences such as light, sound and other vibrations as possible. We exposed the crystals to different frequencies that altered precisely an octave (440 Hz 880 Hz etc.), to tones with different amplitudes, and to different types of music (like Bach, Apocalyptica or Clannad). We repeated our experiments and the results were reproducible. The different frequencies and amplitudes alone did not give significant differences compared to the “blanco” samples (the crystals that had not been exposed to the music or tone), but the crystals exposed to the music showed differences in size, form and structure of the surface.

A combination of rythem and frequency

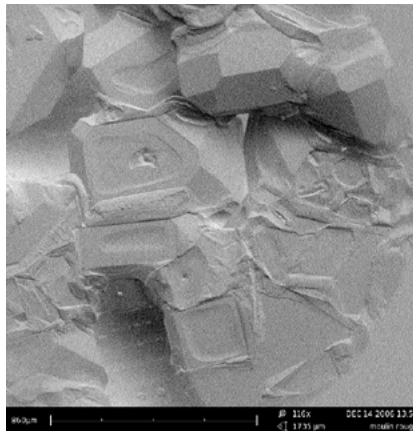
What exactly caused those differences we could not define with our procedures, budget and time, but that the most visible effect was seen in the crystals exposed to different songs (and not to frequencies alone) seems to indicate that the combination of frequencies and rhythm in the vibrations causes the difference. We examined the crystals with the naked eye, with a light microscope and with an electron microscope (the Phenom™ Microscope). This application note shows some examples from the crystals we examined with the Phenom microscope.



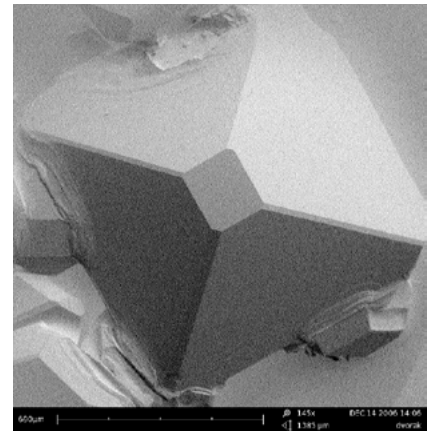
Alum crystals, not exposed to music. magnification t: above: 1x, below: 23x.



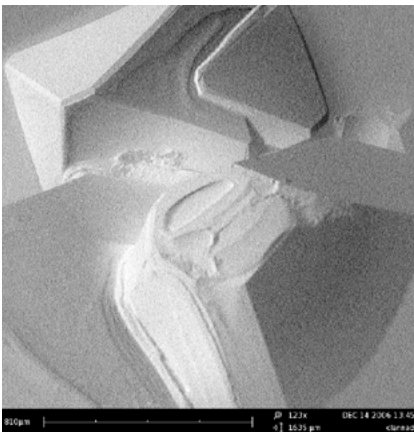
Crystal exposed to Bach.
magnification: 146x.



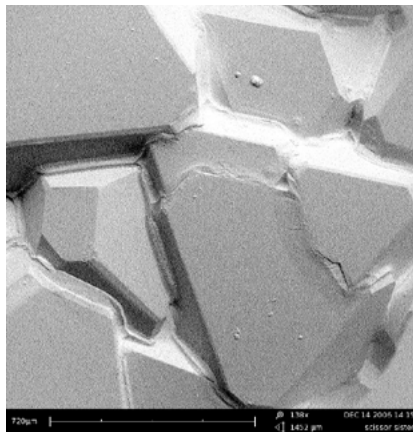
Crystal exposed to Moulin rouge.
magnification: 116x.



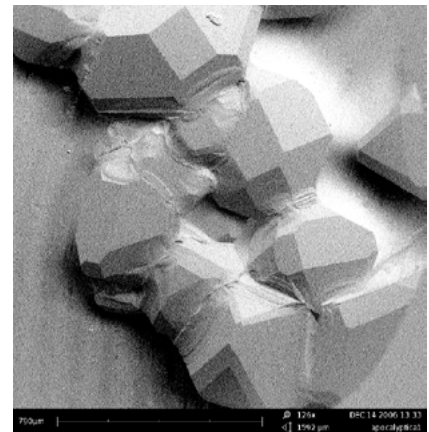
Crystal exposed to Dvořák
magnification: 145x.



Crystal exposed to Clannad.
magnification: 123x.



Crystal exposed to the Scissor Sisters.
magnification: 138x.



Crystal exposed to Apocalyptica
magnification: 126x.

Note:

This is a summary of an obligatory practical research for secondary school performed by Juliette Schuurmans and Fleurieke Verhagen, December 2006 / January 2007 gymnasium Beekvliet in Sint-Michielsgestel, The Netherlands.