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Celebrating crystallography from K to 12 at CIMF, Montreal

P. Pillot[1], P. Heron[2], C. LowKam[2], V. Barbier[1], F. Beylich[1], A. Chambon[1], J. Falletto[1], M. Leroux[1], J. Pelé[1], J. Sygusch[2], D. Kajetanek[1], C. Kremer[1], M. Legris[1]

[1]College International Marie de France, Montreal, Canada, [2]Universite de Montreal, Department of Biochemistry, Montreal, Canada

If crystallography is well known to many scientists, this is not true for the general public. Aims of the international year of crystallography include the desire to increase public awareness, to stimulate the intellectual curiosity of students and to promote crystallographic education. At the College International Marie de France, we decided to tackle these challenges and celebrate IYCR2014 with students from kindergarten to grade 10 and by an outreach with the Universite de Montreal (UdeM). We will illustrate how, beyond appreciating the mesmerizing ordered crystal growth from a saturated solution, studying and performing crystallization activities has a proven track record for fostering academic and practical skills. If crystallography starts by the Bragg's iconic law, then most undergraduate students will not appreciate it. However, crystals do have an intrinsic aesthetic appeal that can serve as a starting point to stimulate students' interest. Instead of teaching crystallography as a discipline, could we not teach key scientific concepts through it? We devised three distinct approaches addressing skills and notions appropriate to students in kindergarten, primary or grade 10 school levels. Younger pupils can make descriptions, comparisons and learn about symmetry and growth based upon the observation of snowflakes or crystal growth from solution, encouraging them to formulate basic concepts regarding solubility and changes in states of matter. Growing crystals allows primary students to practice mathematical skills such as measuring angles, masses, volumes and describing shapes. This sets the stage for problem solving using the scientific method. Older students take part in workshops ranging from diffraction patterns generated by lasers to simulating growth with cellular automata. They also undertake protein crystallization experiments in partnership with UdeM thereby offering unique access to crystallographic facilities and insight into scientific research.

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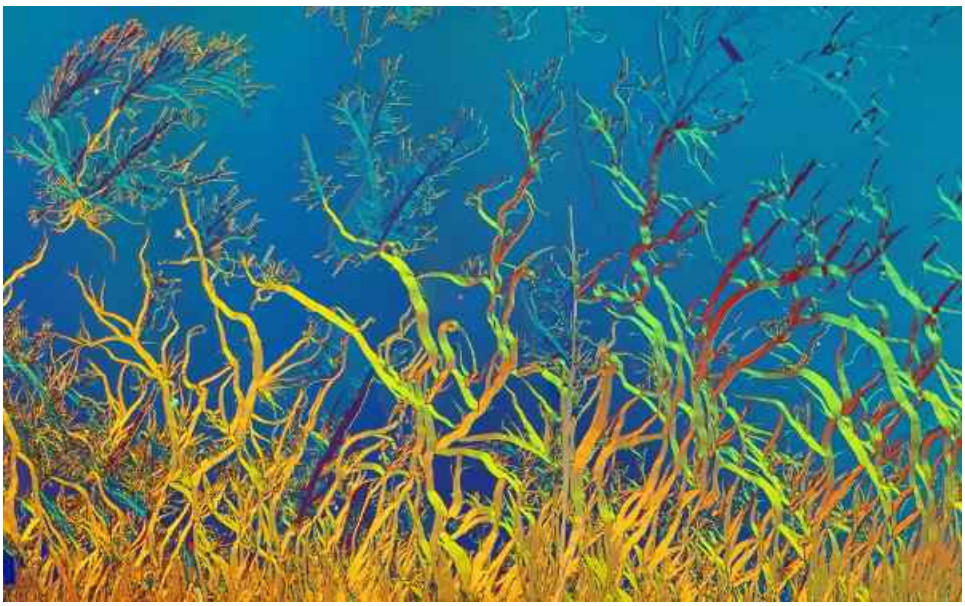

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