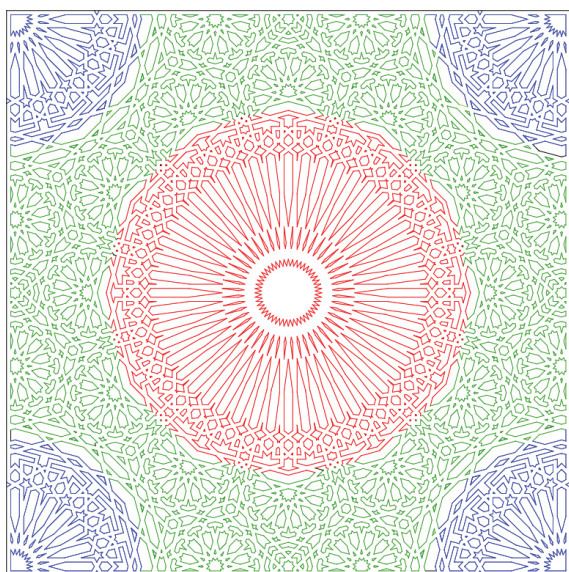


It will then be possible to achieve all the known patterns on any plane area whatever by using computational program, to improve the existing pattern and to innovate others 2-dim as well as 3-dim patterns. Two methods of construction, the Foussaïfissa and Hasba, are used in the realization of Moroccan geometric patterns. The Foussaïfissa method, rather adapted to the construction of the finer mosaics leads to decorated framework space or basic pattern constituted of central area called Rosette (“Naâoura”), a peripheral area at the limit of the framework (“Alaach”), and an interface area Belt (“Lahzam”). The symmetry of the Rosette generally multiple of 8-fold is the symmetry of the motif. This method introduces a misfit between central area and periphery. To build valid motifs with perfect adequacy between the three areas, designers have to respect scrupulously several artistic rules of drawing based on the notion of module measure called Hasba.



[1] Bourgoïn, J., 1973, *Arabic Geometrical Pattern and Design*, Dover Publications. [2] Branko Grünbaum and G. C. Shephard. *Interlace Patterns in Islamic and Moorish Art* Leonardo, 25: 331-339, 1992. [3] Castera, Jan-Marc, *Arabesques: Art Decoratif du Maroc*. Courbevoie: ACR, 1996.

Keywords: symmetry; geometric pattern; measure

FA2-MS03-P04

Anatolian Turkish Architectural Ornamentation: Crystal Symmetry Applications. Didem Rodoplu^b, Semra Ide^c, Elif Hilal Soyulu^d, Nermin Saman Dogan^a, Ebru Bilget^a, Heval Simsek^a. ^a*Hacettepe University, Department of Art History, 06800 Beytepe-Ankara, Turkey.* ^b*Hacettepe University, Institute of Pure and Applied Sciences, Nanotechnology and Nanomedicine Division, 06800 Beytepe-Ankara, Turkey.* ^c*Hacettepe University, Department of Physic Engineering, 06800 Beytepe-Ankara, Turkey.* ^d*Karadeniz Technical University, Faculty of Science & Literatur, Department of Physics 61080, Trabzon, Turkey.*
E-mail: didemrodoplu@gmail.com

Symmetry, from molecular size to macro size has amazingly become a part of our life [1-3]. From our historical behind, symmetry shows itself by visual work of art. At present time, this symmetry knowledge is used for technological applications. It's importance can be seen at scientific studies as much as artistic applications. And also, symmetry knowledge carries us from the basic scientific scope to physics' (Quadratic Phase Transition Theory- Spontaneous Symmetry) and mathematics' (Diamond Theory) modern theories [4-5]. Crystal structures have excellent arrangements indicating by so many symmetry elements. In crystallography as well as structure analysis, subjects such as phase transitions, supramolecular structures' chemical design needs symmetry knowledge. Art and science can not be apart from each other. For scientific study, we transfer the whole systematic knowledge into our study but for artistic studies we express our emotions. With this study, we aimed bringing together art and science to investigate Turkish historical and cultural resources. We investigated Anatolian Seljuk and Emirates Period (in 13th -14th Centuries) religious and social architectural buildings' geometrical and vegetal ornamentations [6-7]. In addition to these samples' drawings, evaluations and original photographs are classified. As a conclusion, seeing these symmetrical applications together, can be beneficial for different disciplines such as architecture, art history, textile, crystallography, geometry, mathematical calculations, etc. Firstly, during the measurement analysis it has been found amazing, having long range huge patterns beside unit motifs. Another striking example comes across as two dimensional symmetrical applications which include curve-spherical surfaces.

[1] P. R. Bunker, P. Jensen, *Molecular Symmetry and Spectroscopy*, NRC Research Press, 1999 Canada. [2] R. A. Evarestov, V. P. Simirnov, *Site Symmetry in Crystals: Theory and Applications*. [3] Schneider, Gerd, *Geometrische Bauornamente Der Seldschuken in Kleinasien*, Wiesbaden, 1980. [4] Schneider, Gerd, *Pflanzliche Bauornamente Der Seldschuken in Kleinasien*, Wiesbaden, 1989. [5] Mulayim, Selcuk, *Anadolu Turk Mimarisinde Geometrik Suslemeler Selcuklu Cagi*, Ankara: Kultur ve Turizm Bakanligi Yayinlari, 1982. [6] *Phase Transitions and Crystal Symmetry*, Yu. A. Izyumov, V. N. Syromyatnikov, Ins. Of Metal Physics, Kluwer, The Language of Science, 1990. [7] *Symmetry and Crystal Design*, J. W. Lauher, *ACA Transactions*, 39, 31-40, 2004.

Keywords: architectural ornamentation; symmetrical application; crystallography

FA2-MS03-P05

Characterization of Clay Used for Beauty by the Moroccan Traditional Women. Fatima-Zahra Boujrhaj^{a,b}, Rajaâ Cherkaoui El Moursli^b, Herbert Poellmann^c. ^a*Université Sultan Moulay Slimane, Faculté des Sciences, B.P. 523, Béni Mellal, Morocco.* ^b*Laboratoire de Physique Nucléaire, Faculté des Sciences, B.P. 1014, Rabat, Morocco.* ^c*Institute for Geological Sciences Mineralogy/Geochemistry Von-Seckendorff-Platz 3, 06120 Halle/Saalem Germany.*
E-mail: boujrhaj@yahoo.fr