

# Zviti kristali – izjema ali pravilo?

Dr. Mirjan Žorž

PMS – 04.09.2014



Prehnit, La Combe, Francija, 16 x 11 mm

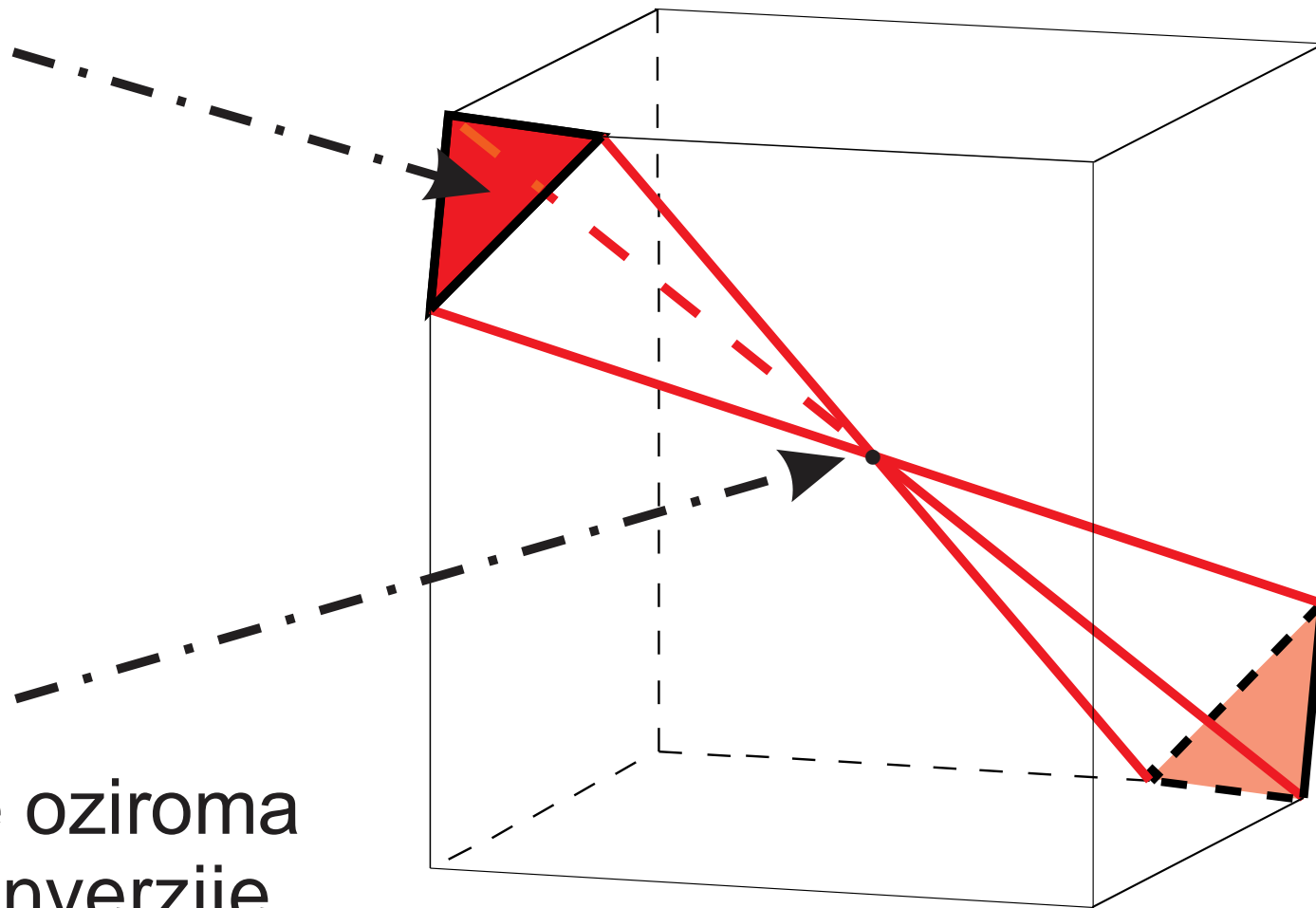
# 1. del - zvitni kristali nepolarnih simetrij

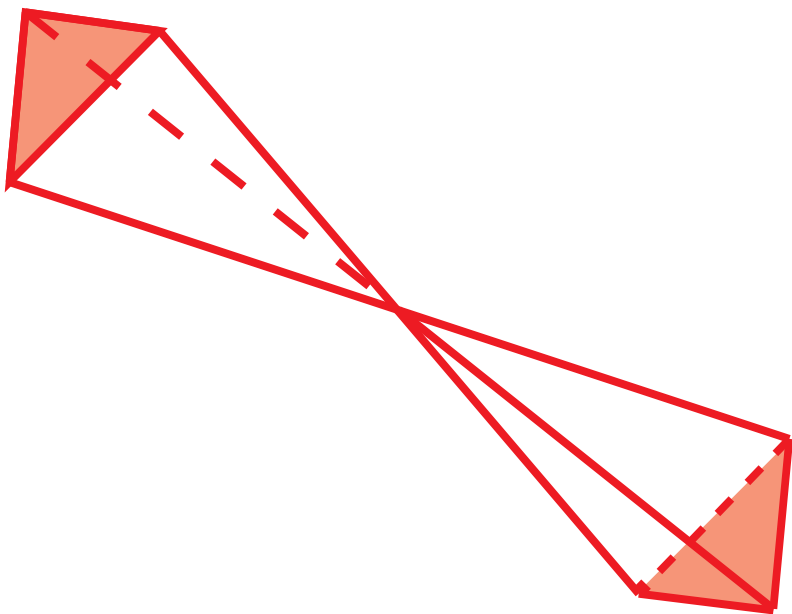


Fluorit, Mahodari, Indija, 29 mm

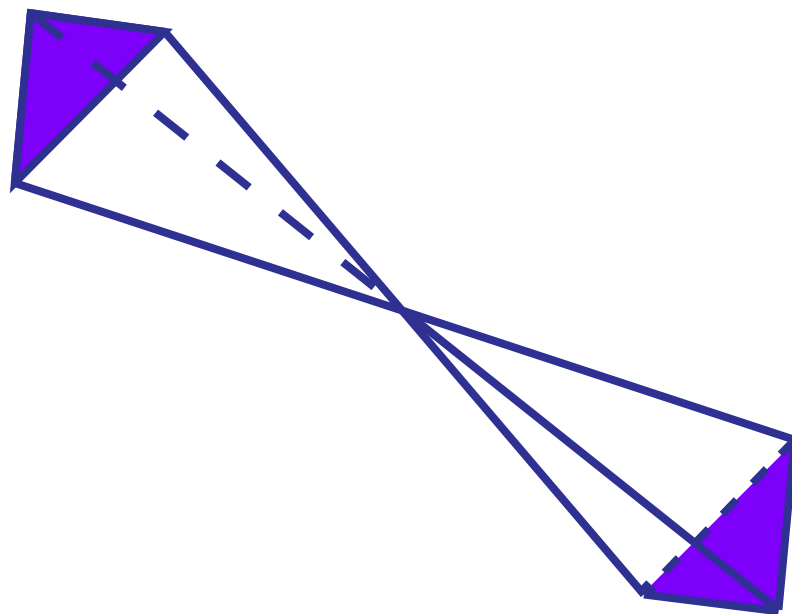
simetrijsko specifična  
ploskev

vozišče oziroma  
center inverzije

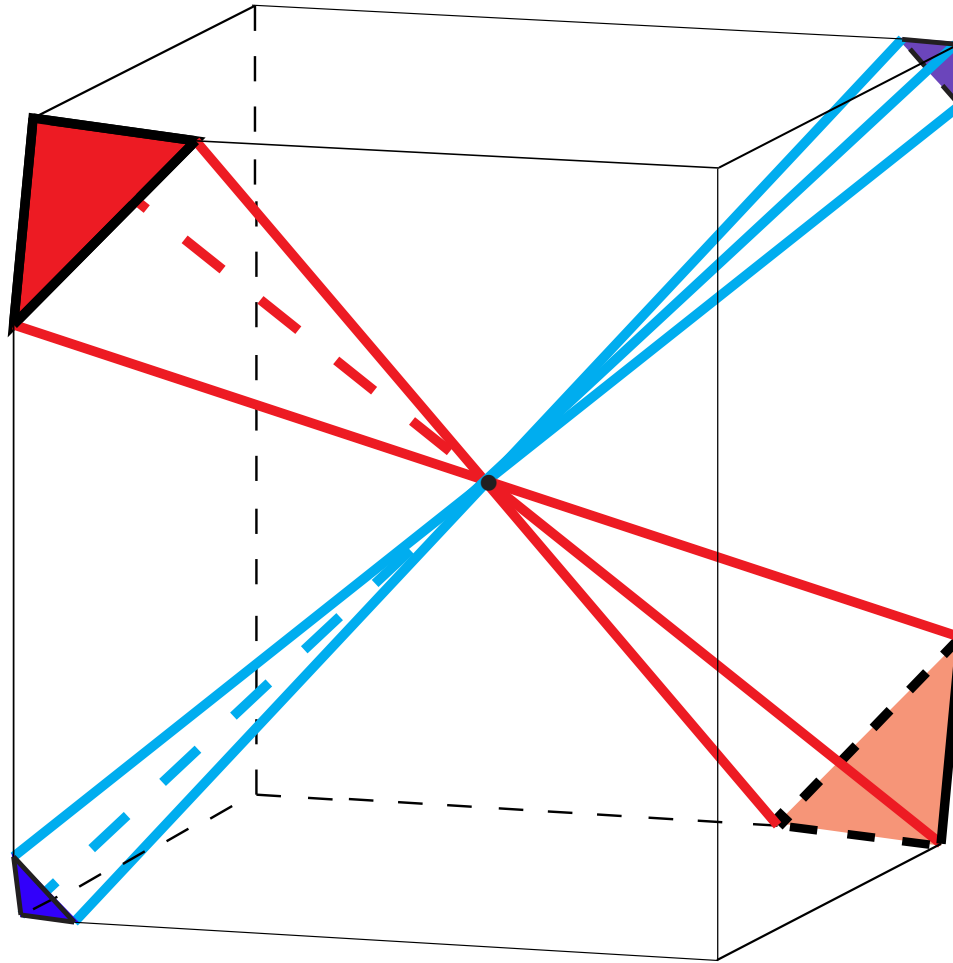




pozitivna nepolarna os



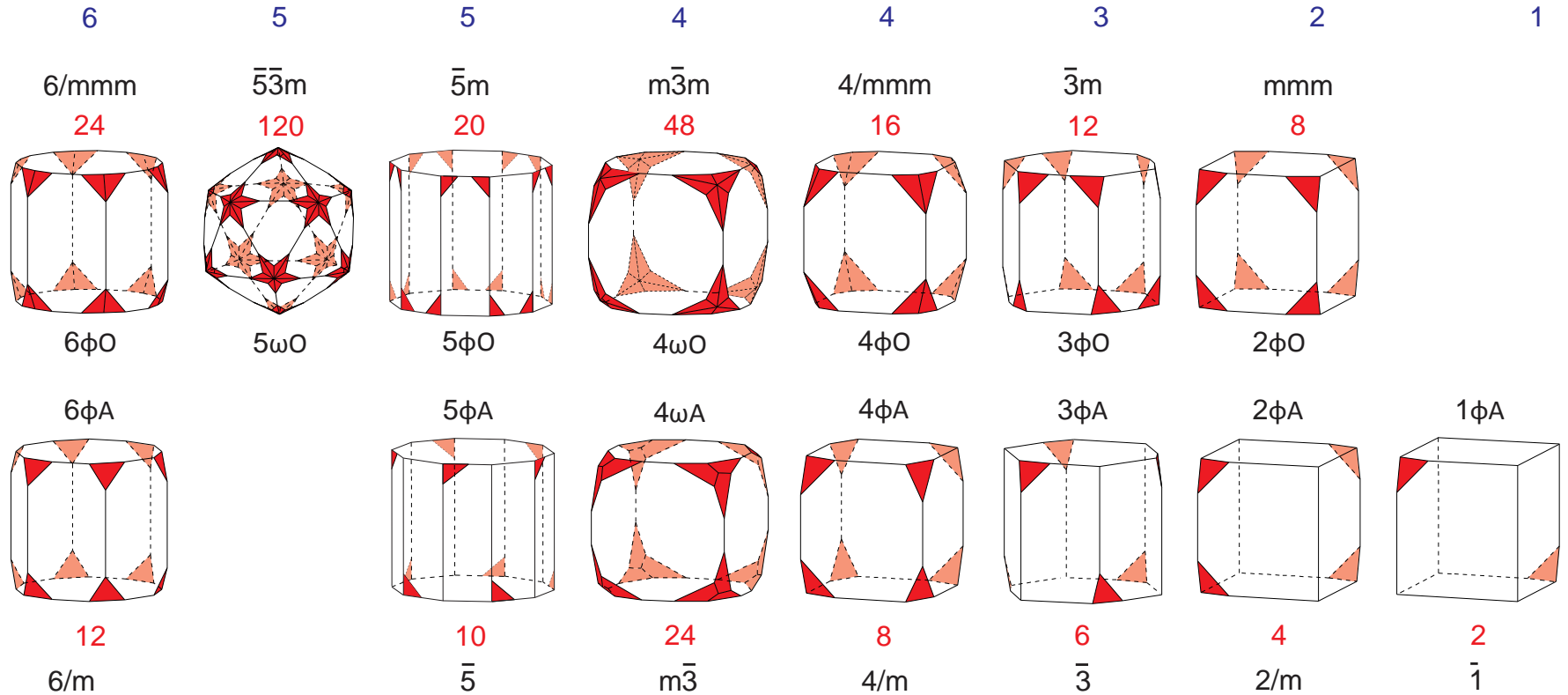
negativna nepolarna os



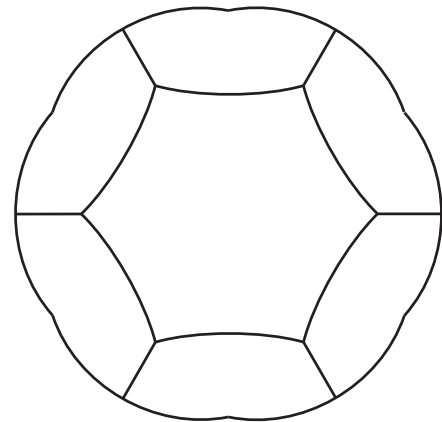
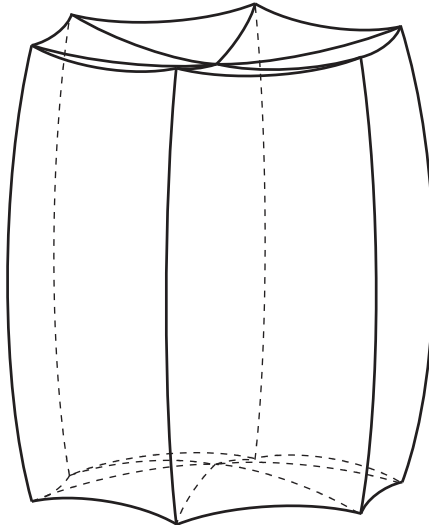
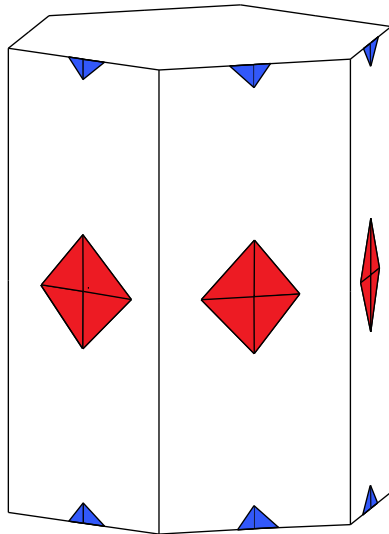
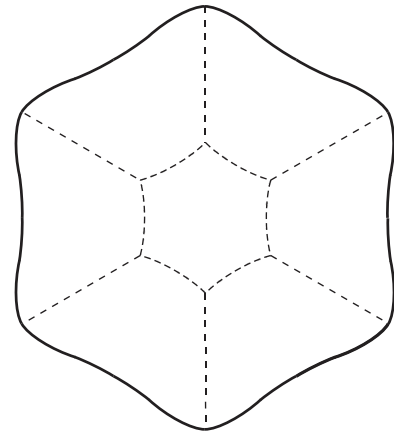
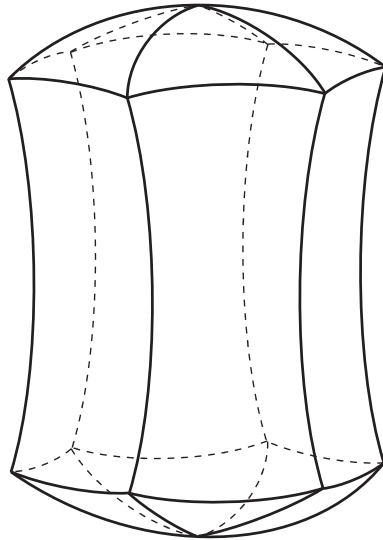
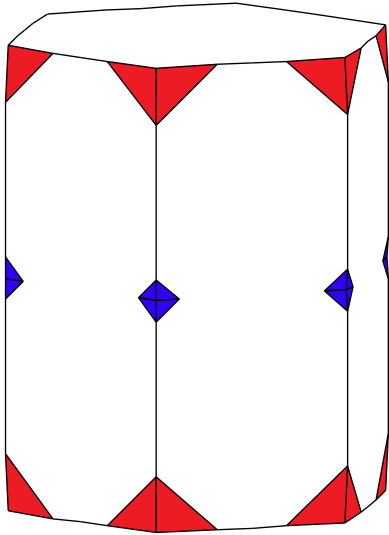
najnižja nepolarna simetrija

# Nepolarne simetrije

## $n \leq 6$



$6\phi 0$



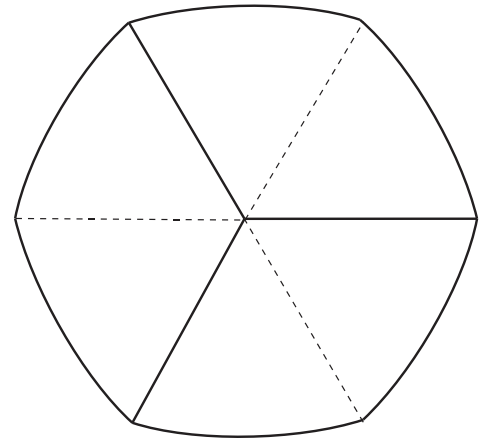
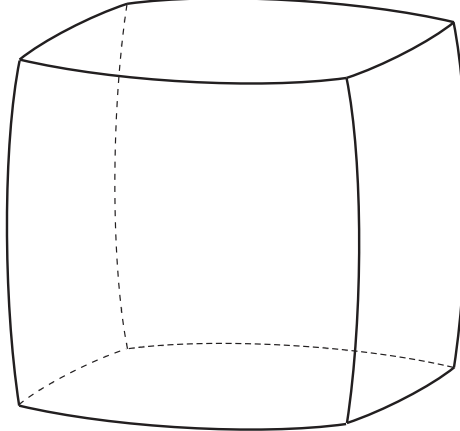
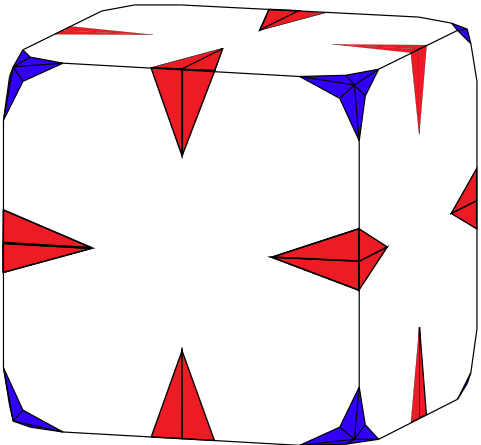
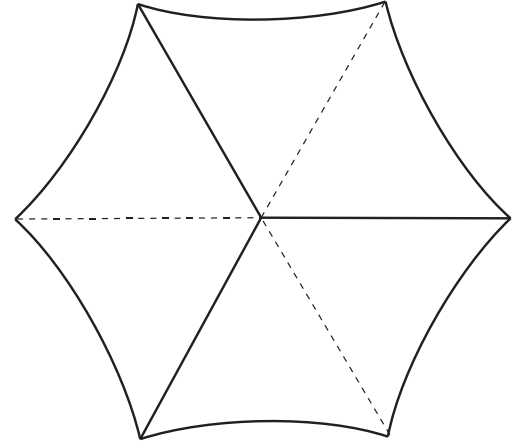
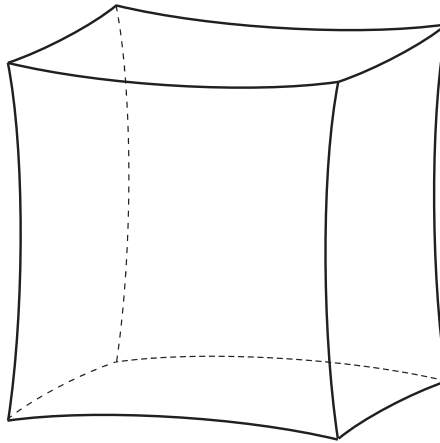
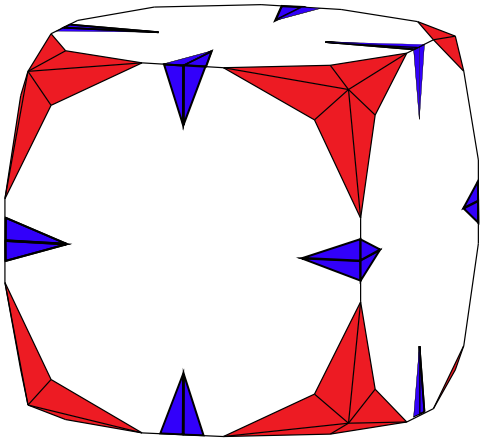
**Kremen, Castagnola, Italija, 71 x 18 mm**



**Kremen, Cavnic, Romunija, 118 x 32 mm**



$4\omega 0$



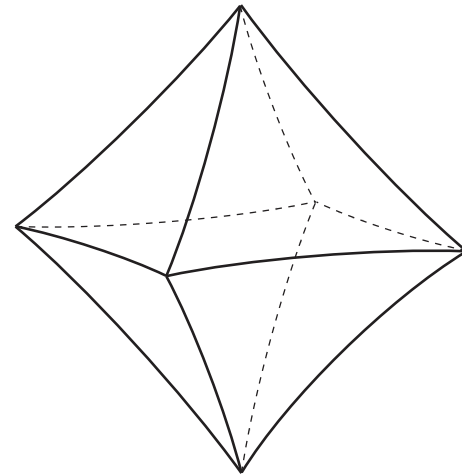
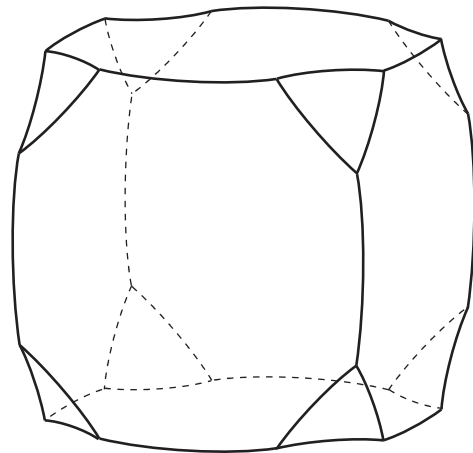
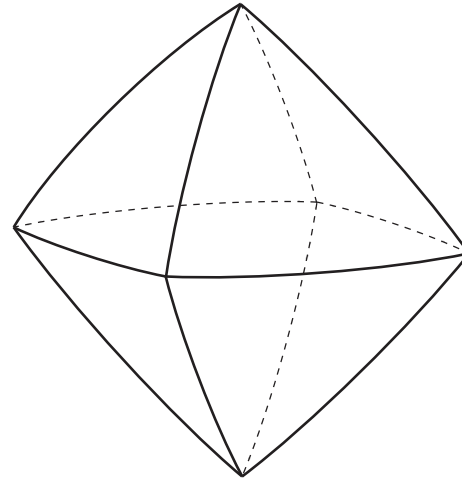
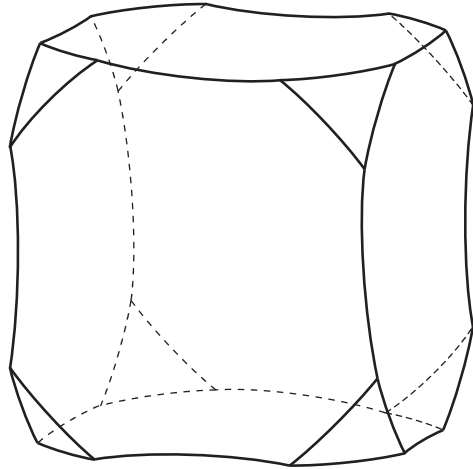


**Fluorit, Elmwood, Missouri, ZDA, 6 x 6 mm**

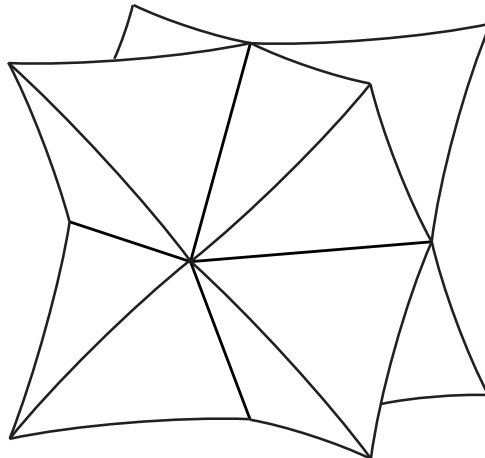
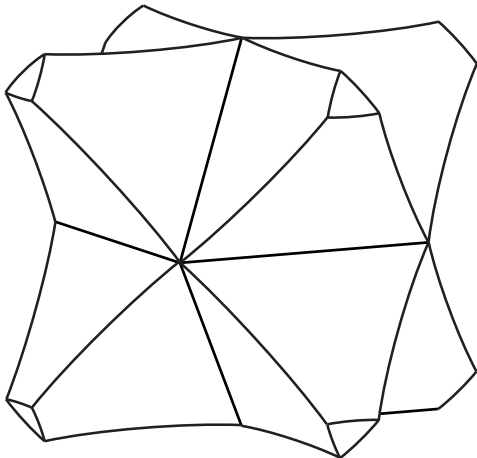
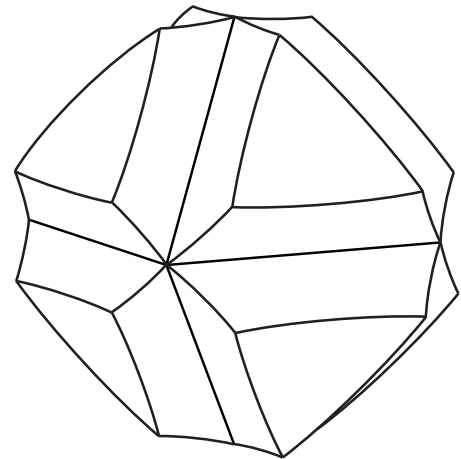
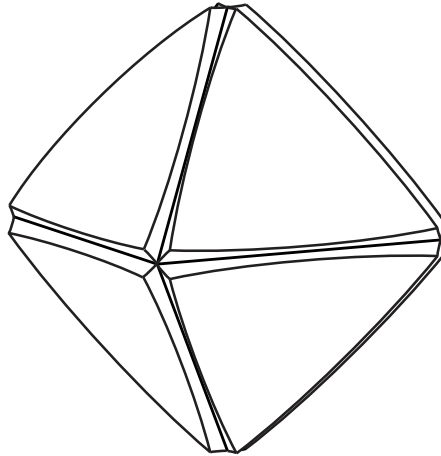
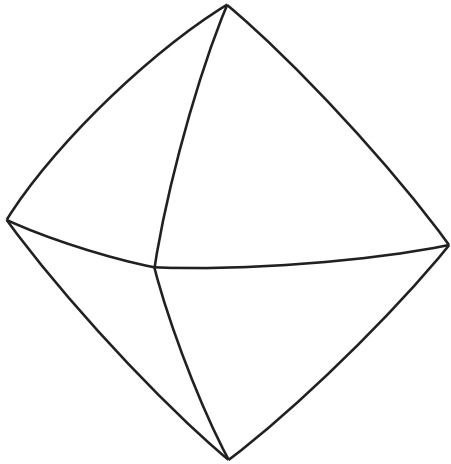


**Fluorit, Allier, Francija, 6 x 6 mm**

$4\omega 0$



$4\omega 0$



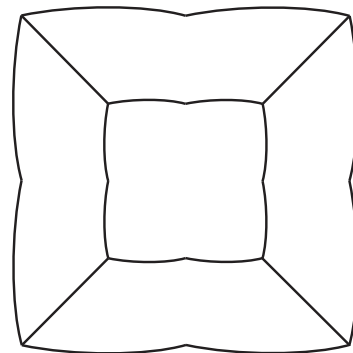
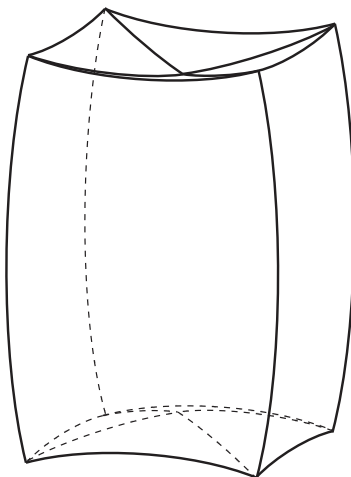
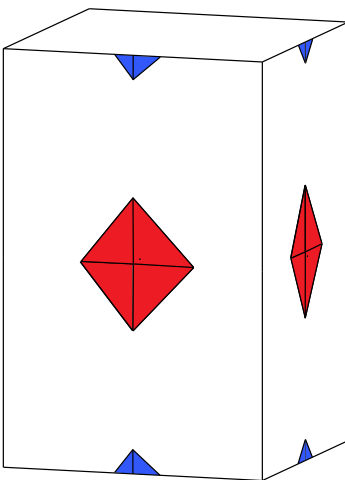
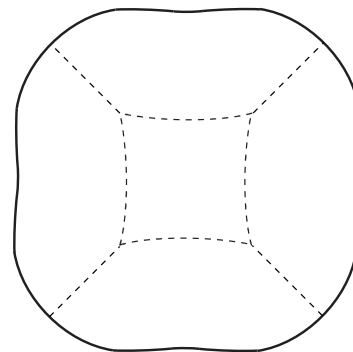
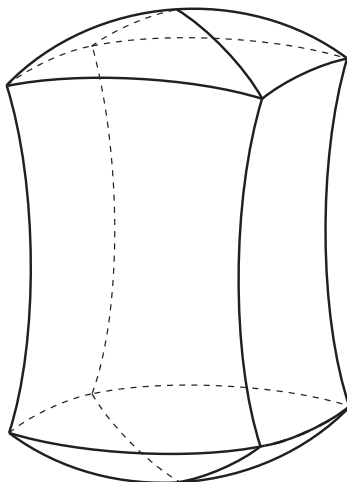
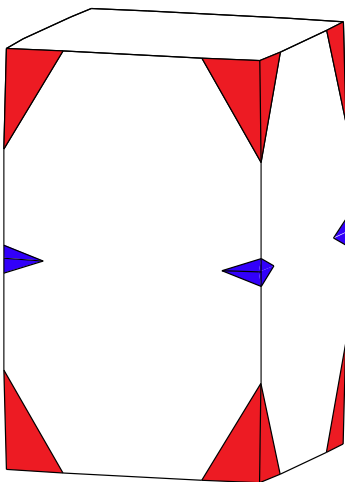


Fluorit, Oelsnitz, Nemčija, 13 x 13 mm



**Magnetit, Džezkazgan, Kazakstan, 32 x 31 mm**

$4\phi 0$





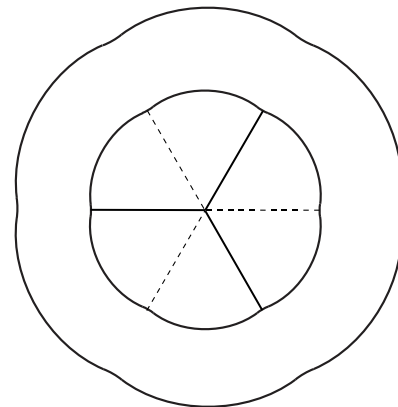
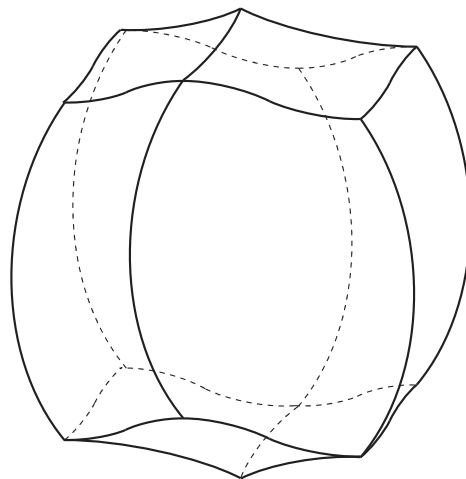
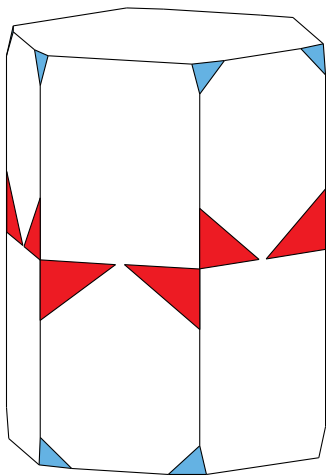
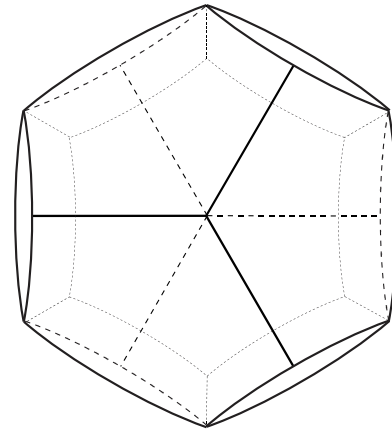
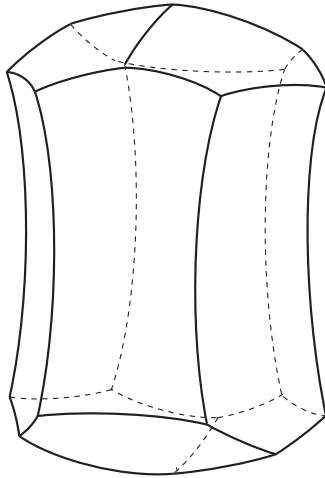
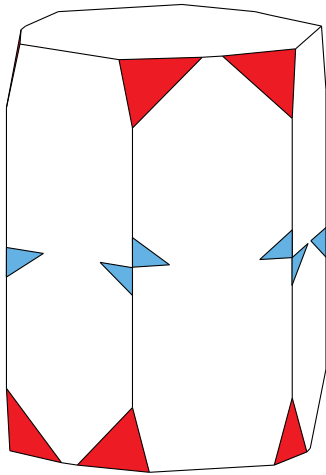
**Torbernit, Entregues, Francija, 10 x 8 mm**



**Fluoroapofilit, Jalgaon, Indija, 44 x 10 mm**



$3\phi 0$



Manganokalcit, Dalnjegorsk, Rusija, 67 x 53 mm





**Kalcit, Montalto di Castro, Italija, 8 x 6 mm**

Smithsonit, Broken Hill, Avstralija, 9 x 8 mm





**Kalci, Herja, Romunija, 21 mm**



**Kalcit, Minerva #1 mine,  
Illinois, ZDA, 70 x 48 mm**



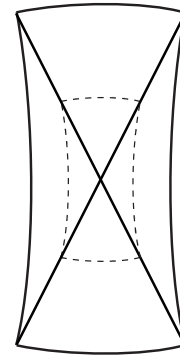
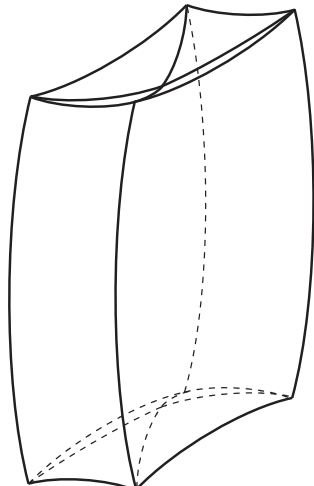
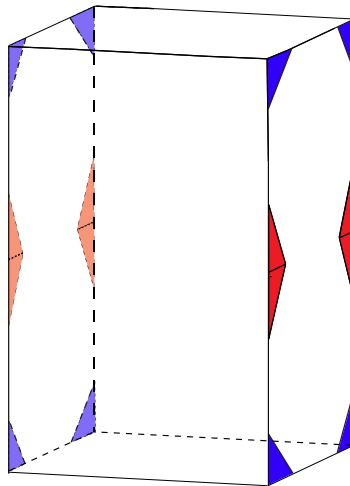
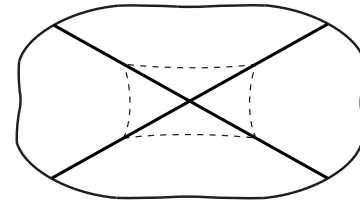
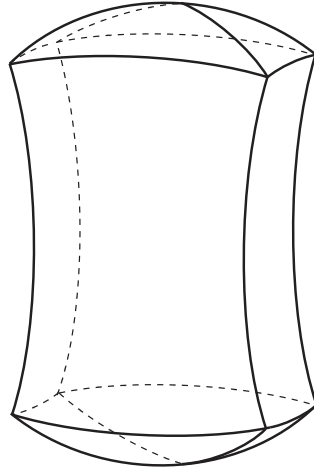
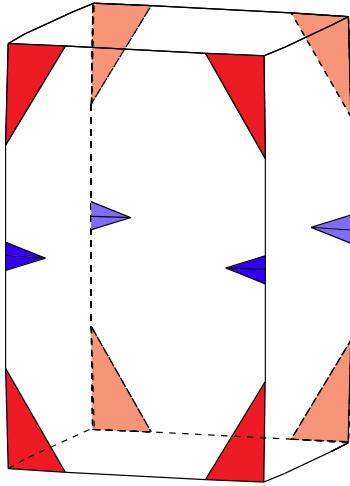
**Kalcit, Herja, Romunija, 50 x 25 mm**



**Kalcit, Herja, Romunija, 25 x 21 mm**



$2\phi 0$



Stilbit, Reißeck, Avstrija, 12 x 5 mm



Stilbit, Ajanta, Indija, 54 x 30 mm



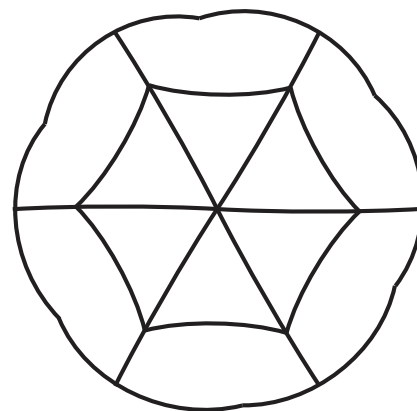
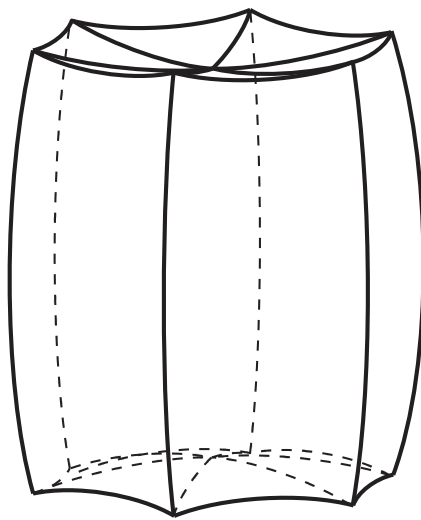
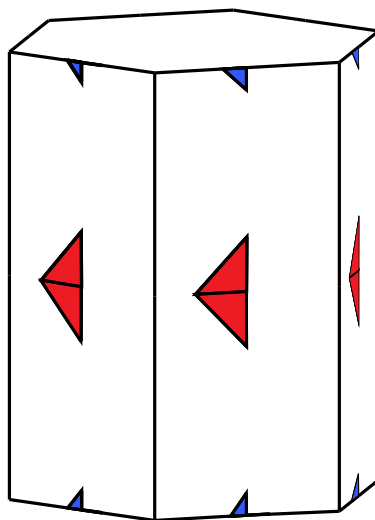
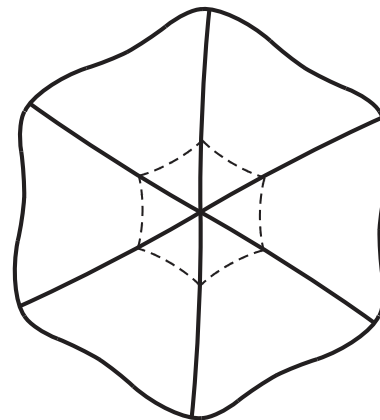
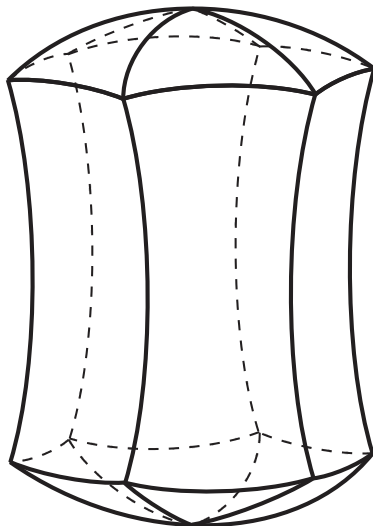
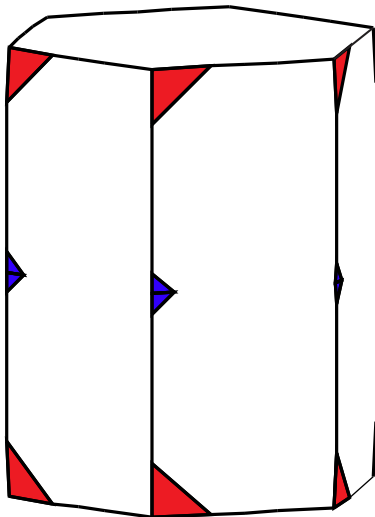


Cavansit, Wagholi, Indija, 12 x 9 mm

Adamin, Mapimi, Mehika, 8 x 7 mm



$6\phi A$





Mimetezit, Mapimi, Mehika, 4 x 2 mm

Mimetezit, Dry Gill mine, Velika Britanija, 5 x 3 mm





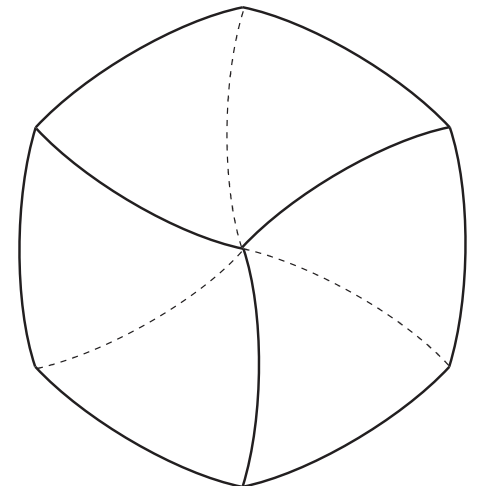
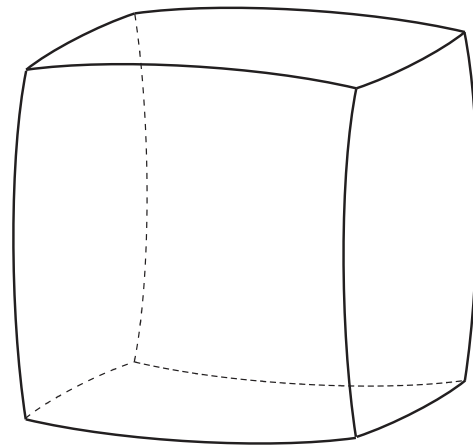
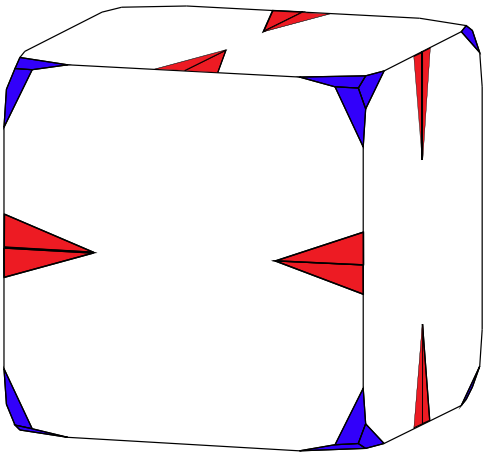
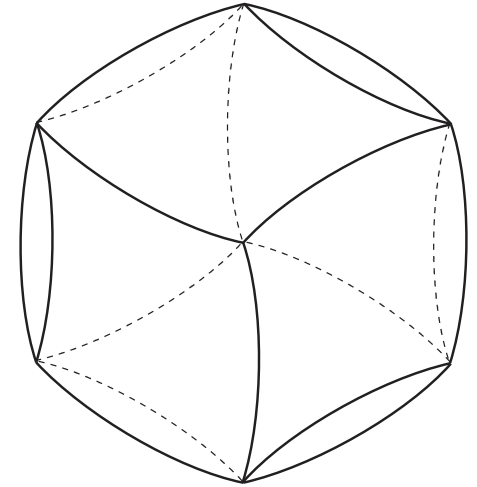
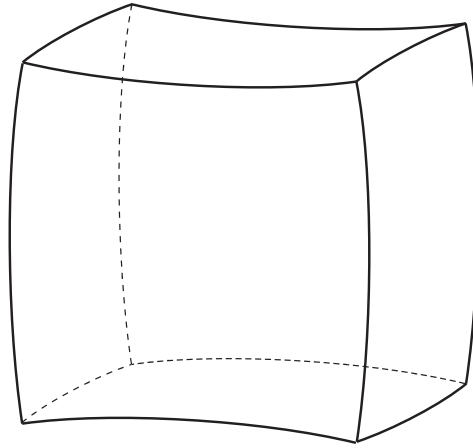
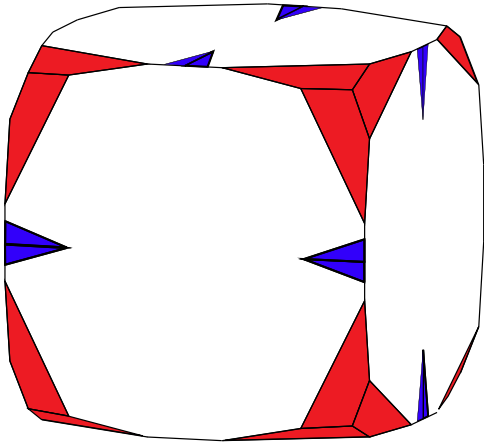


**Apatit, Panasquiera, Portugalska, 21 x 16 mm**



**Piromorfit, Hezhou, Kitajska, 9 x 5 mm**

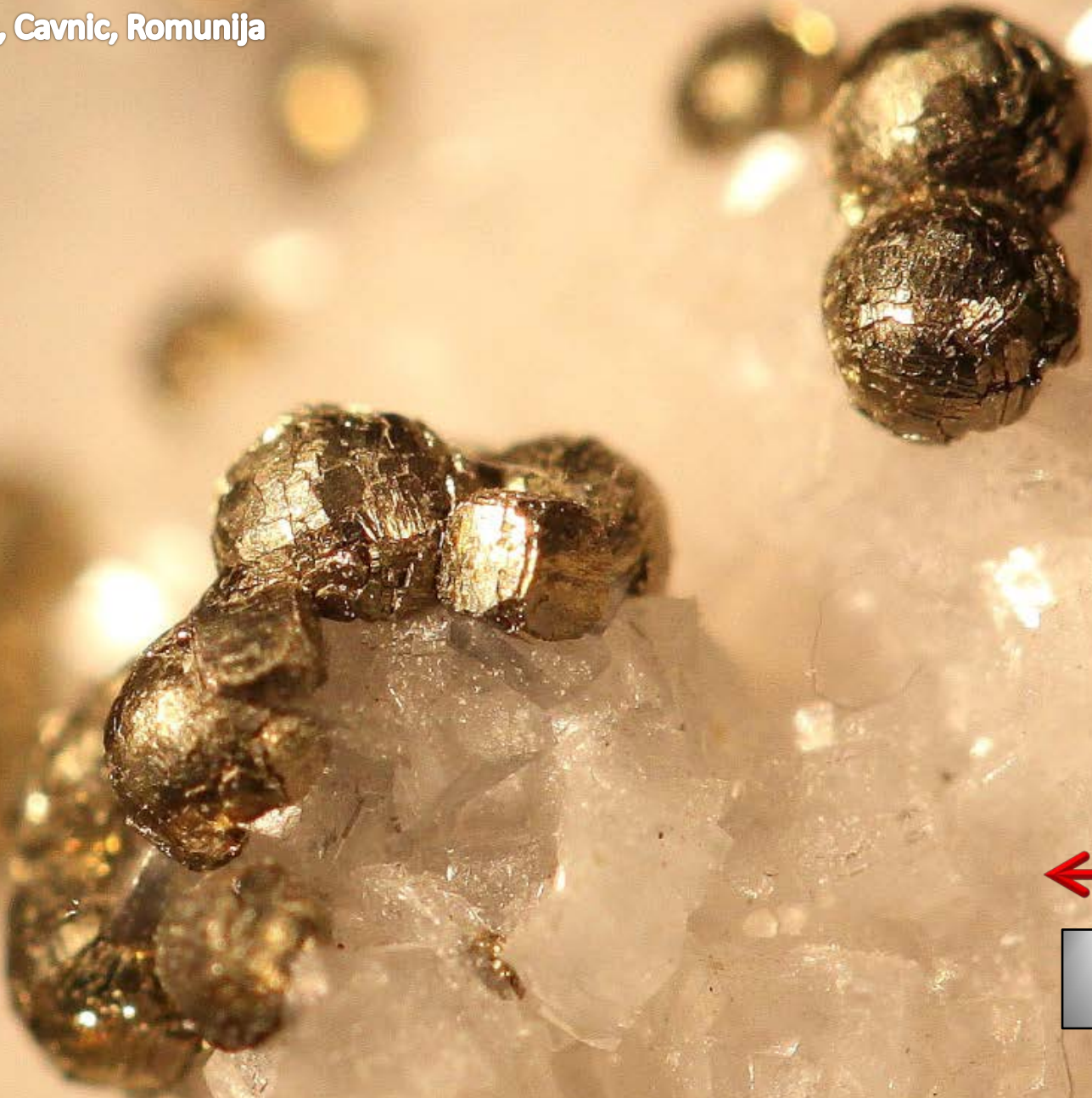
$4\omega A$





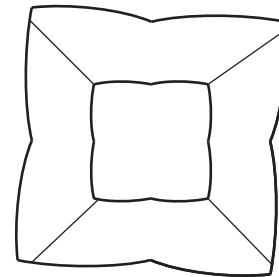
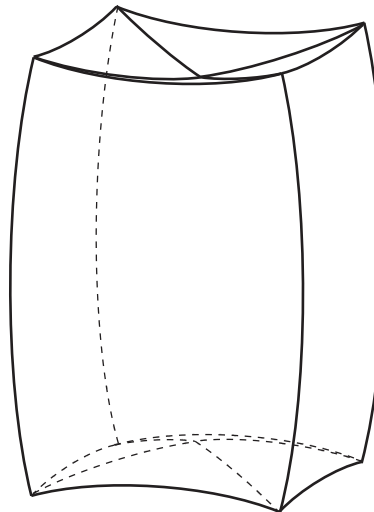
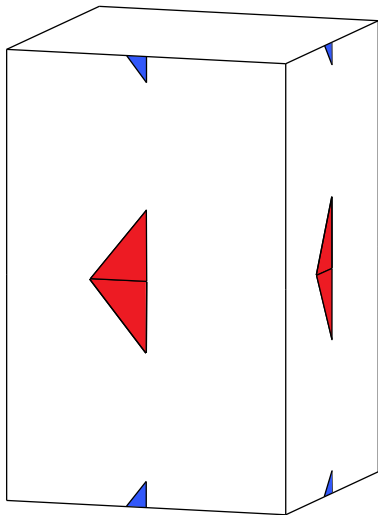
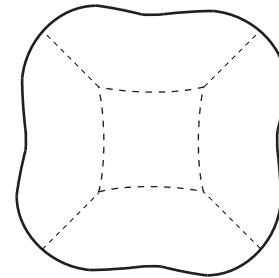
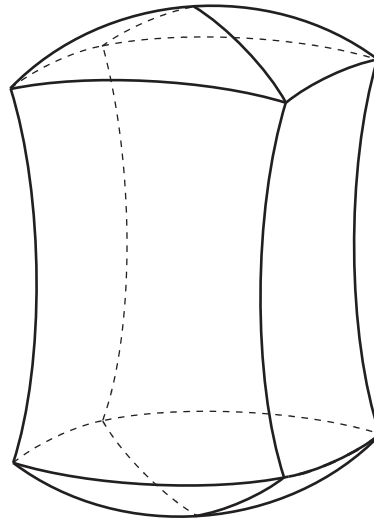
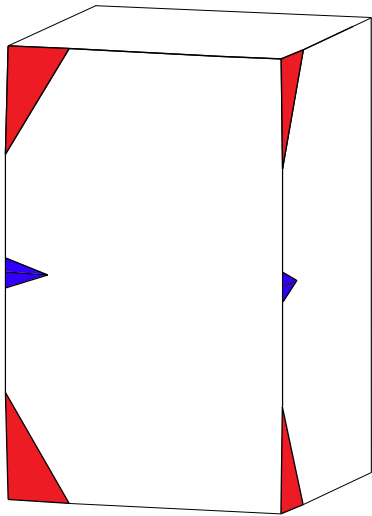
**Navajun, Španija, 40 x 40 mm**

Pirit, Căvnic, România



1 mm

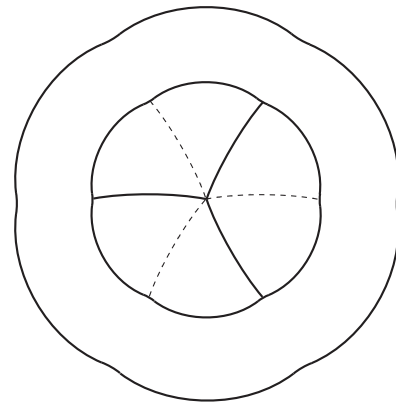
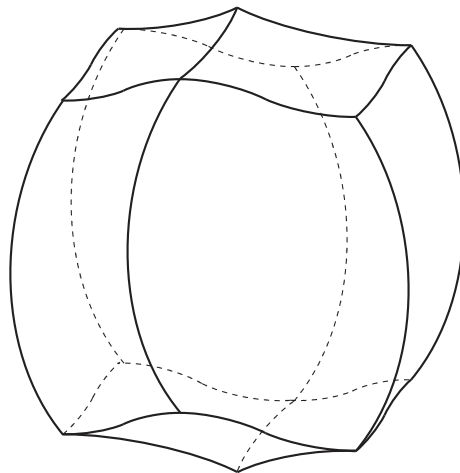
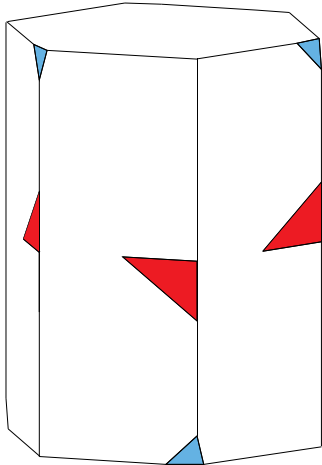
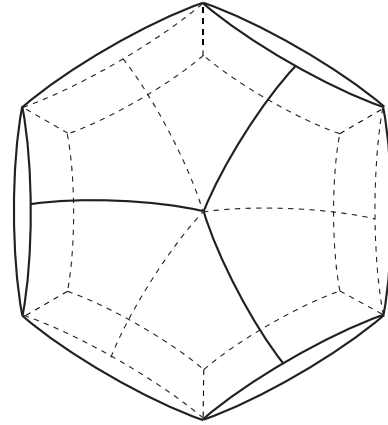
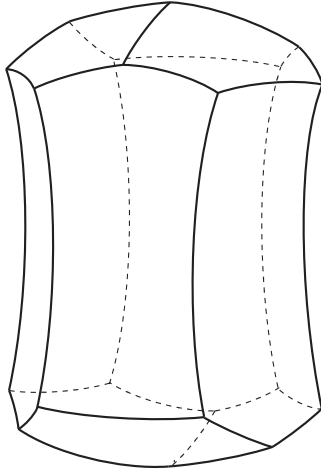
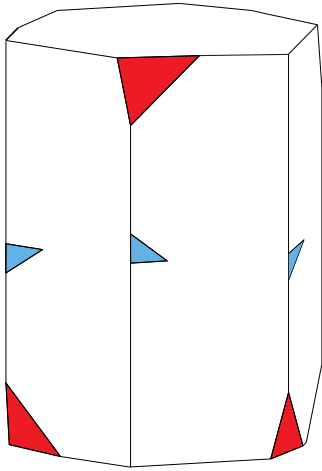
$4\phi A$





**Wulfenit, Mežica - Graben, Slovenija, 4 x 1 mm**

$3\phi A$

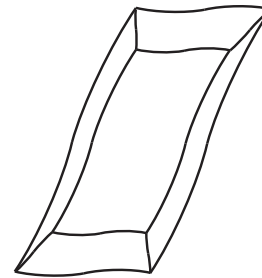
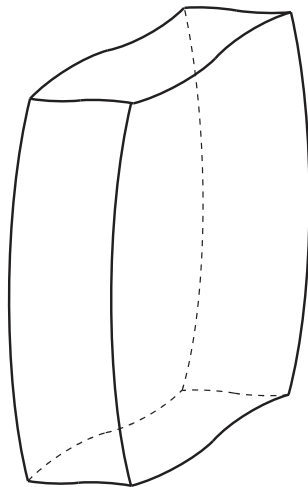
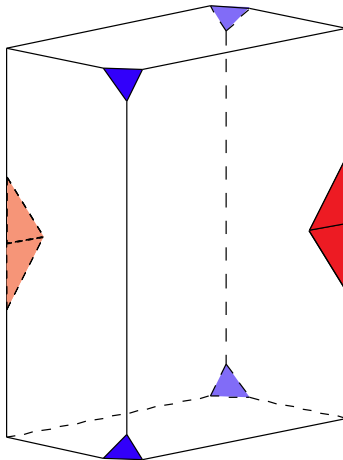
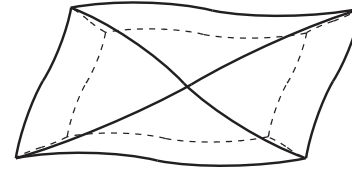
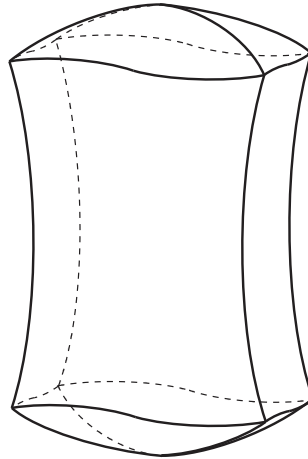
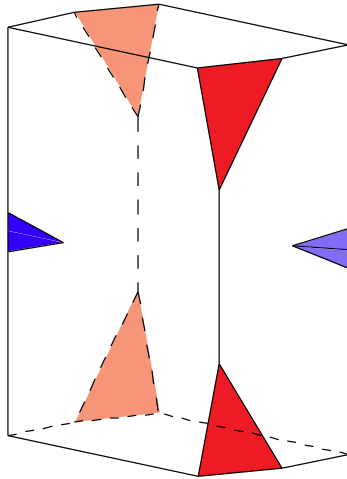




Kutnohorit, Pachapaqui, Peru, 45 x 15 mm



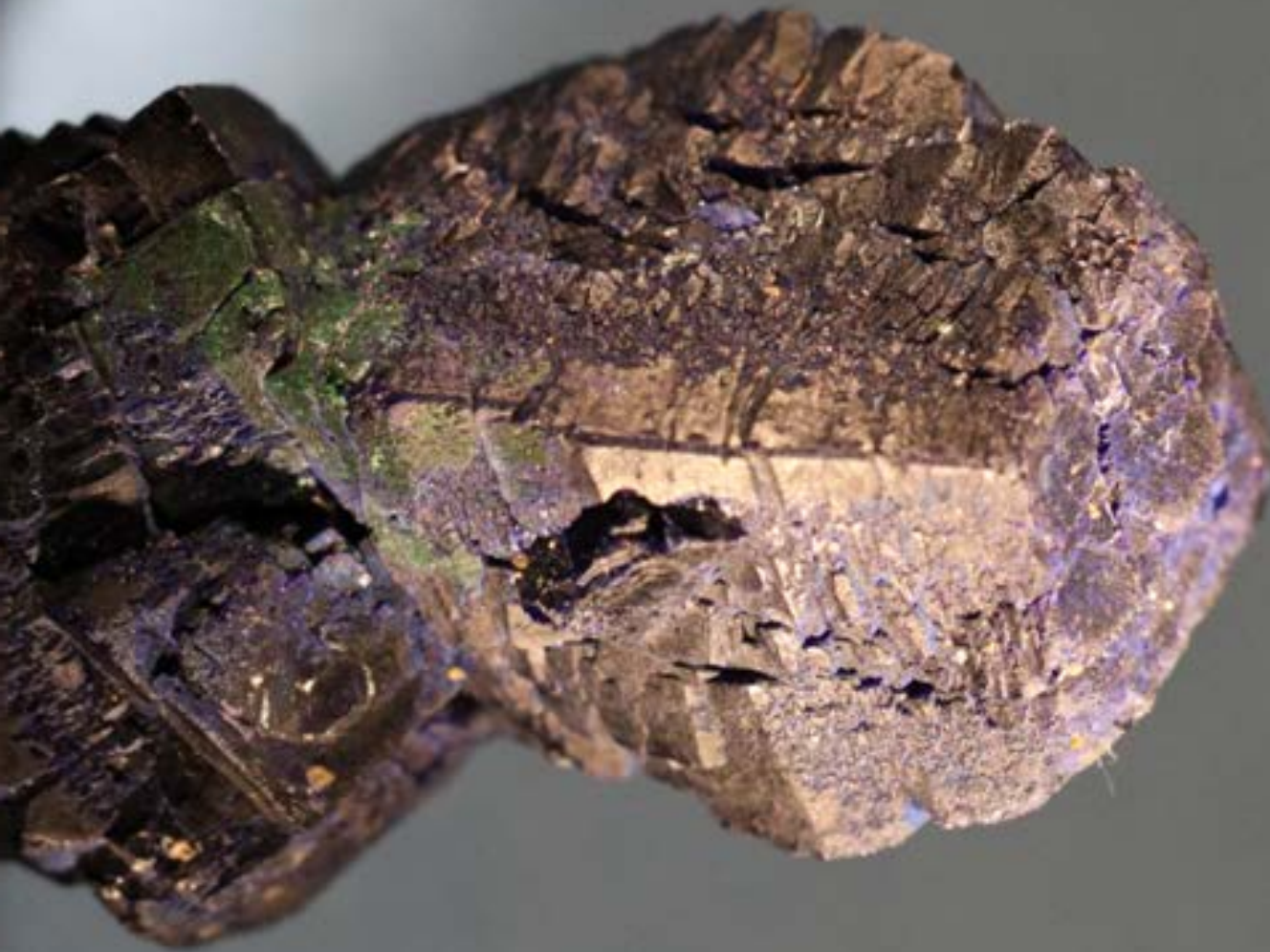
$2\phi A$





**Heulandit, Jalgaon, Indija, 44 x 33 mm**

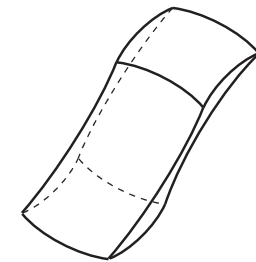
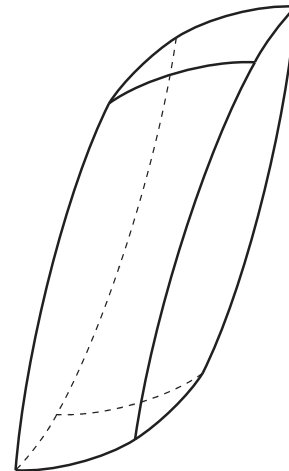
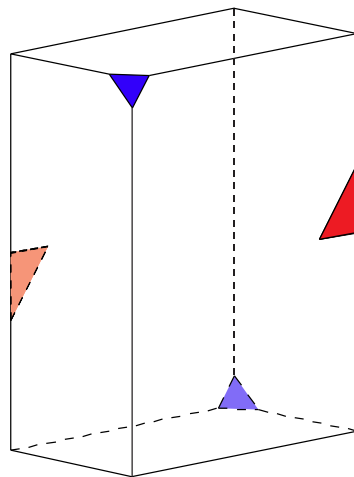
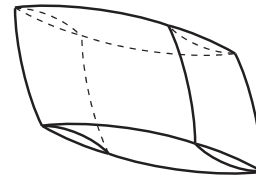
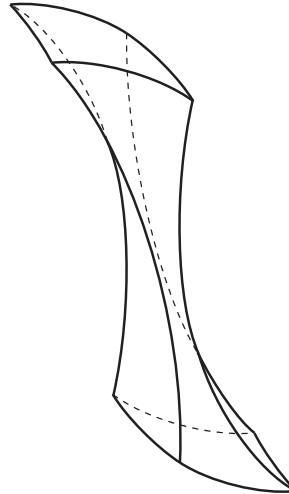
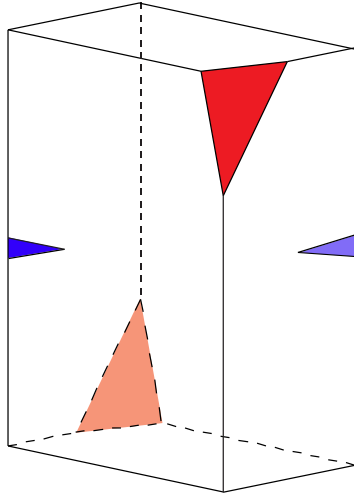
AZURIT, CHESY, FRANCIIJA, 31 X 20 MM



Sadra, Neuenhain, Nemčija, 106 x 38 mm



$1\phi A$





Inezit, Hubei, Kitajska, 22 x 7 mm

Aksinit, Dalnjegorsk, Rusija, 41 x 14 mm

