



**National Student Team Contest (first stage)**  
**Task 8. Colored nanofilms**

Young researcher Ul'yana has made a thin porous aluminum film, which was colored green (wavelength – 530 nm), if one was seeing by a normal to the film.

1. Explain why is the film colored? **(2 points)**

The measurements showed that volume porosity of the film,  $P$ , was 60%. Ul'yana decided that porosity is not large enough and dissolved some of aluminum from the film homogeneously by volume without changing the thickness of the film. After that the color of the film has changed to violet (wavelength – 430 nm).

2. Using the Bruggeman theory of effective medium find the porosity of the film after dissolution. **(8 points)**

**Total – 10 points**