**Activity 2. Exploring the science behind cosmetic creams**

**In the following lessons, you are invited to make a cosmetic cream on your own** and also deal with the so called product development issue (why, to whom, how, the probable price, why should it „work“ - the scientific explanation of the effect etc.). In order to do that, it is important to familiarise yourself in advance to the science behind the cosmetic creams.

After reading individually and discussing in groups about the learning material “Solubility”, try to predict the solubility of a particular substance in the given solvent (Table 1).

**NB!** Keep in mind that polar and ionic solutes tend to be soluble in polar solvents whereas nonpolar ones tend to be soluble in nonpolar solvents. Thus the first step toward answering the question is to label each solute as being ionic or molecular and those that are molecular as polar or nonpolar.

**Example:** Because C7H16 is a hydrocarbon, we recognise it as nonpolar.

Na2SO4, a compound containing a metal and nonmetals, is ionic;

We would therefore predict that C7H16 would be more soluble in the nonpolar CCl4 than in polar H2O. In contrast, water would be the better solvent for Na2SO4.

Table 1. Predicting solubility

|  |  |  |
| --- | --- | --- |
| Solvent | Solute | Soluble/insoluble |
| H2O | HCl |  |
| H2O | CCl4 |  |
| H2O | NaCl |  |
| H2O | CH3CH2OH |  |
| CCl4 | I2 |  |
| CCl4 | CH3CH2CH3 |  |
| CCl4 | NaCl |  |
| H2O | Vegetable oil |  |
| CCl4 | Vegetable oil |  |