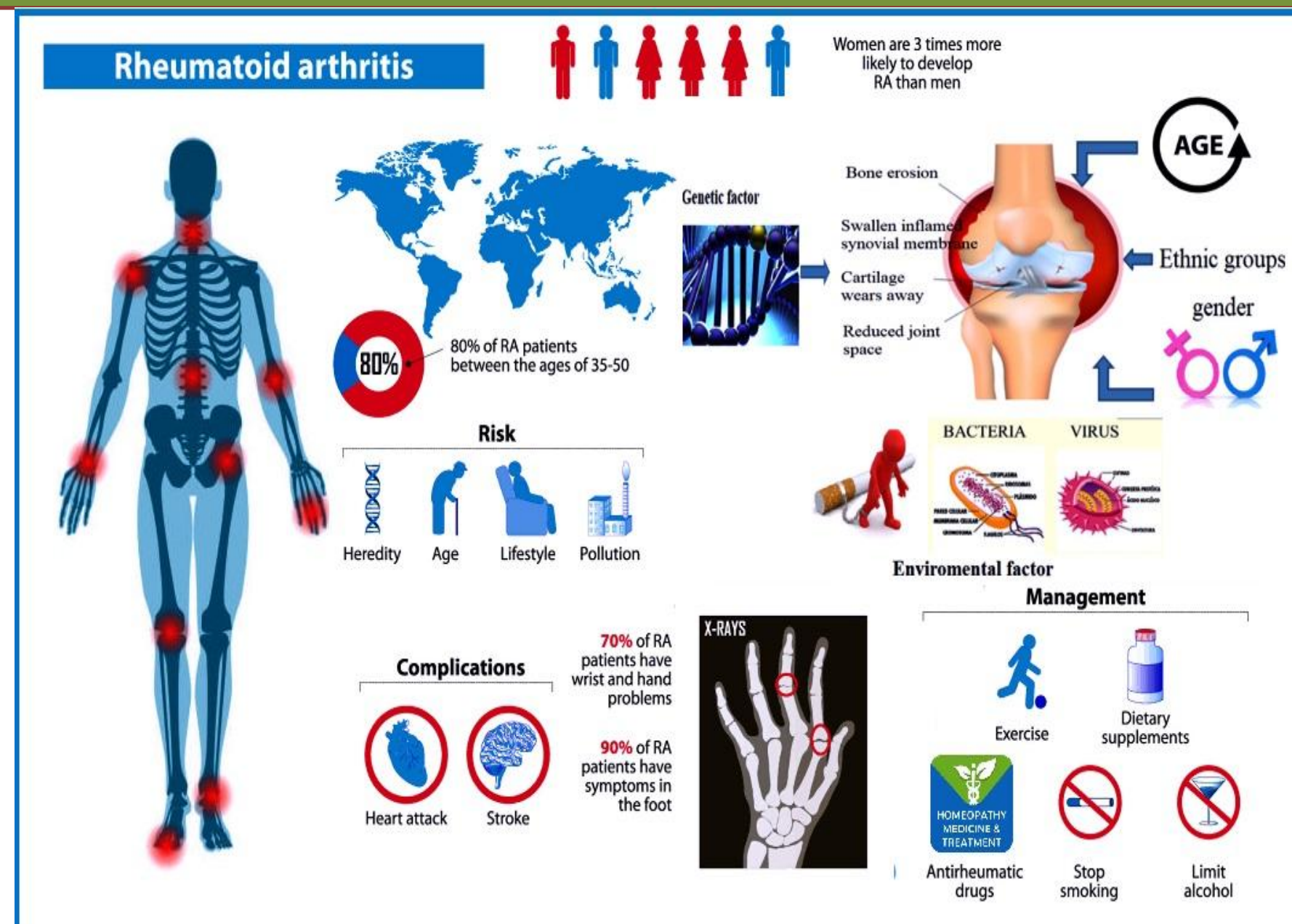


## Introduction

## Need for the study

- Arthritis is swelling and tenderness of one or more of joints that leads to inflammation
- Castor oil is the ideal oil for massaging aching muscles and joints due to the anti-inflammatory effect on nerve inflammation and sore muscle



•Solid self emulsifying drug delivery system (SEDDS) can deliver lipophilic drugs and overcome drawback of liquid SEDDS

•Liquid SEDDS

•Drawback

•Interaction of component with capsule shell

•Stability

•Handling and portability

Soft gel capsule

Ricinoleic acid

Oral administration of SEDDS forms emulsion as it interacts with aqueous phase of GIT. SEDDS oil activates bile secretion. Drug (oil phase) and bile salt further emulsified. Lipase Enz. Triglycerides become metabolized. Hydrolysis Fatty acids & Mono, di, tri glycerides. Absorbed Lymphatic system.

## Materials and Methods

## Results & Discussion

- Material:
- Castor oil
- Kolliphore® EL
- PEG 400
- HPMC E 50LV
- Corn starch
- Lactose
- Microcrystalline cellulose
- Instrument Used:
- Shakti Lab spheroniser

### Formulation By D-Optimal mixture Design of Experiment

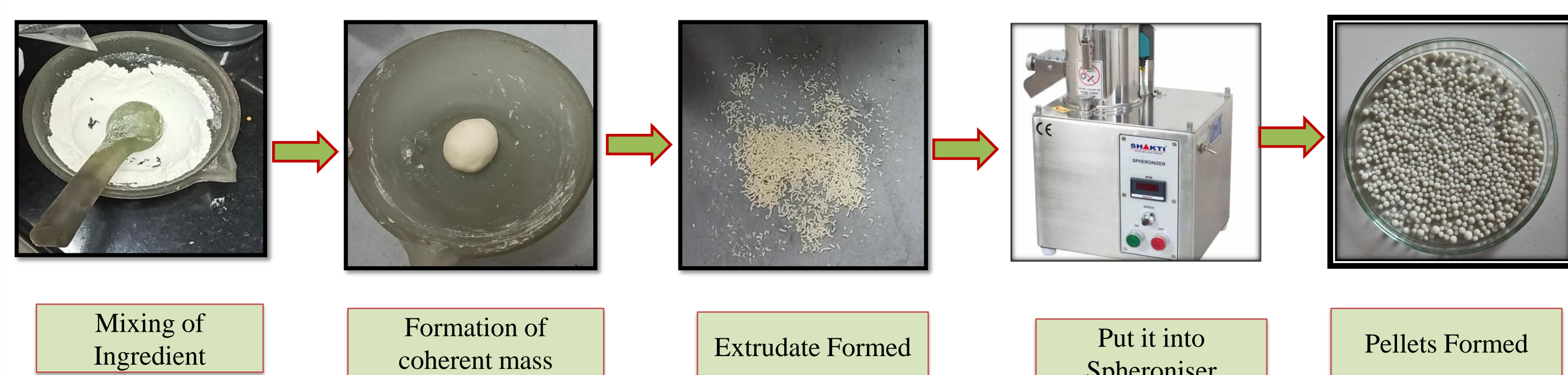
#### Selection of concentration range for experimental design

Excipient	Low (%)	High (%)
Castor oil	30	70
Kolliphore® EL	10	60
PEG 400	10	60

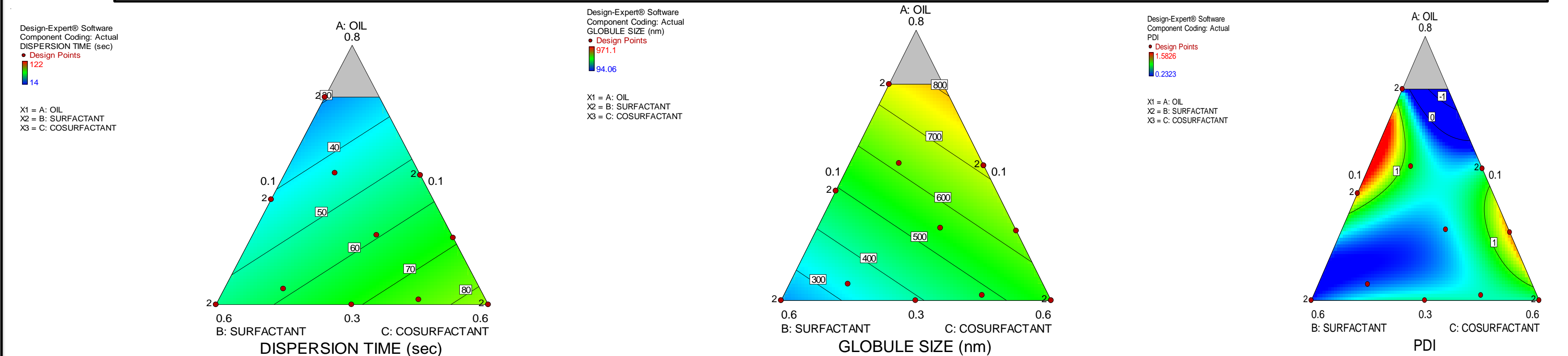
### Formulation design for SEDDS with Dispersion time, Globule size and PDI

Run	Oil (%)	Surfactant (%)	Cosurfactant (%)	Dispersion Time(Sec)	Globule size(nm)	PDI
F 1	42.89	10	47.10	18	743.53	1.405
F 2	30	10	60	79	582.95	0.782
F 3	43.40	23.79	32.79	74	426.83	0.514
F 4	30.97	22.29	46.73	122	544.96	0.67
F 5	70	20	10	14	971.1	0.447
F 6	30	10	60	82	570.3	0.717
F 7	33.05	46.09	20.84	88	180.7	0.341
F 8	54.95	10	35.04	60	582.53	0.648
F 9	30	35.09	34.90	38	418	0.6616
F 10	70	20	10	27	275.03	0.380
F 11	50.27	39.72	10	34	839.73	1.5826
F 12	55.38	25.46	19.15	67	781.9	0.8526
F 13	30	60	10	41	94.06	0.233
F 14	30	60	10	41	98.06	0.3533
F 15	50.27	39.72	10	48	780.3	1.213
F 16	54.95	10	35.04	65	598.63	0.726

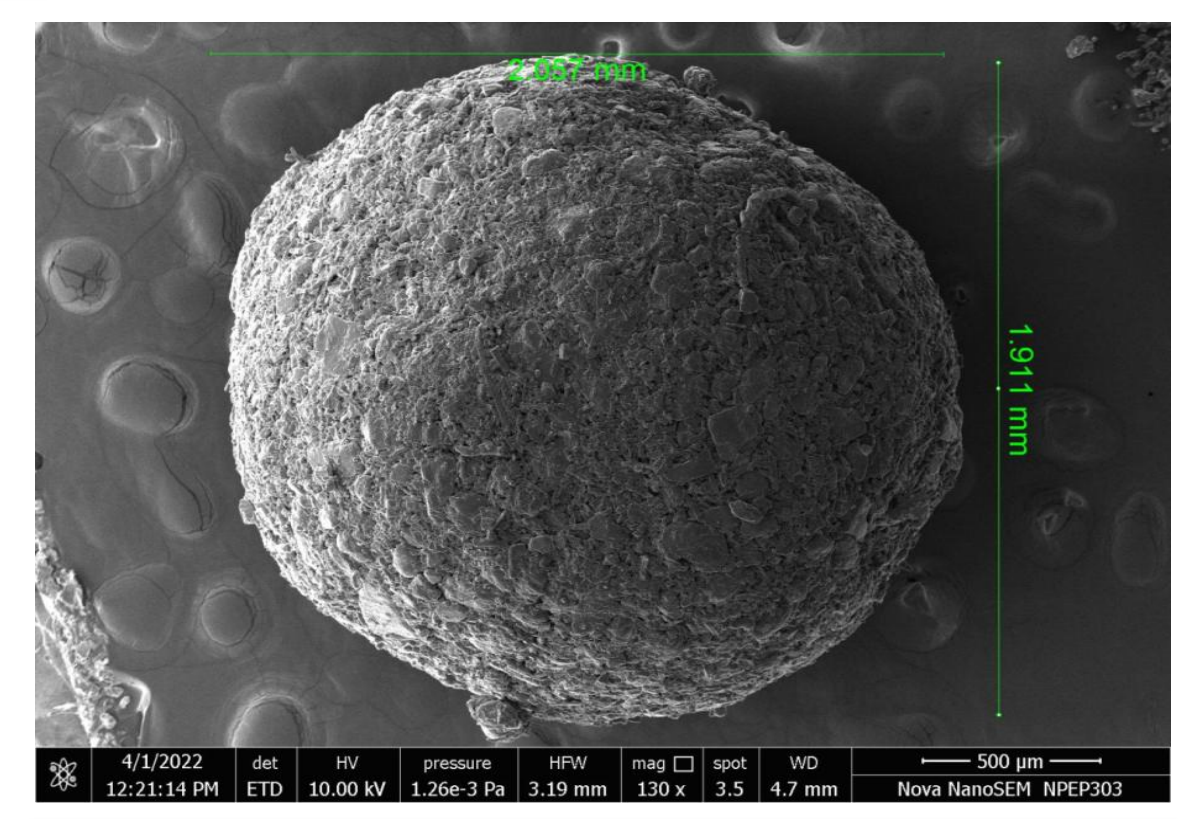
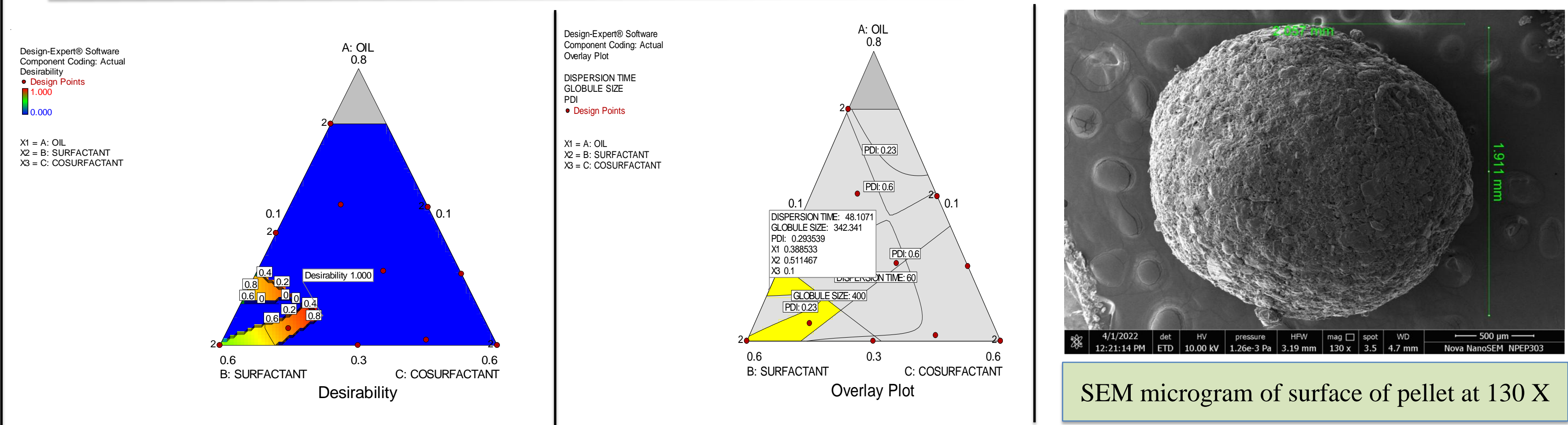
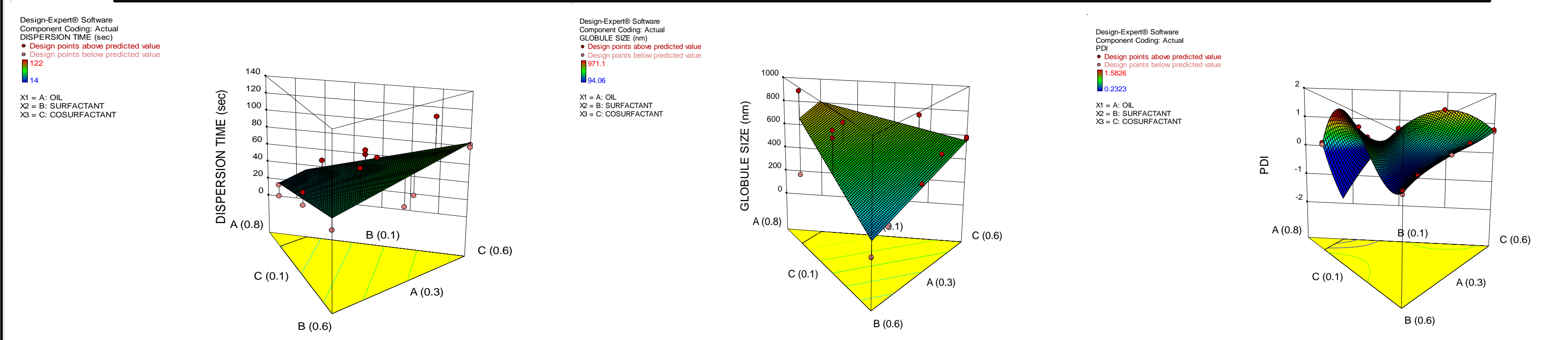
### Method



### Counter plot of responses



### 3 D Surface Plot



### Statistical Analysis

Source Model	Sum of square		df		Mean square		F values		p-value Prob > F	
	Globule size	Dispersion Time	Globule size	Dispersion Time	Globule size	Dispersion Time	Globule size	Dispersion Time	Globule size	Dispersion Time
Linear	4.327	4354.06	2	2	2.164	2177.03	4.47	3.48	0.0333	0.0618
Residual	6.293	8143.69	13	13	48406.76	626.44				
Lack of Fit	3.850	7944.19	8	8	48130.94	993.02	0.99	24.89	0.5322	0.013
Pure Error	2.442	199.50	5	5	48848.07	39.90				
Cor Total	1.062	12497.75	15	15						

## Summary & Conclusion

## Acknowledgments & References

- Castor oil containing self emulsifying pellet successfully developed and optimized by using D optimal mixture design, that could be potentially used for improving oral absorption of castor oil.
- Design Expert gave linear model as best fit model for Globule size and dispersion time of pellet.
- On the basis of design space the final formulation contain castor oil, Kolliphore EL, and PEG 400 of 38.85%, 51.14% and 10% w/w respectively with expected dispersion time of 48 sec, globule size of 342.34 nm, and 0.29 PDI

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